

13
NYASALAND PROTECTORATE



ANNUAL
MEDICAL & SANITARY
REPORT

for the year ending 31st December, 1936

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1937:

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MEDICAL DEPARTMENT,

ZOMBA,

NYASALAND.

16th March, 1937.

SIR,

I have the honour to submit for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State for the Colonies, the Medical Report on the Health and Sanitary Conditions of Nyasaland for the year 1936, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

A. D. J. BEDWARD WILLIAMS,

Director of Medical Services.

The Hon. The Chief Secretary to the Government,
Zomba.

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MAP.

A map of the Protectorate showing distribution of hospitals and dispensaries :
the shaded areas indicating the distribution of tsetse fly.

SECTION I. ADMINISTRATION.

(A) STAFF.

The staff sanctioned for the year 1936 was:—

(a) European.

Director of Medical Services.	Pathologist.
Senior Health Officer.	Matron.
Senior Medical Officer.	10 Nursing Sisters.
Medical Entomologist.	2 Sanitary Superintendents.
14 Medical Officers.	Clerk and Medical Storekeeper.
	Junior Clerk.

(b) Asiatic.

10 Sub-Assistant Surgeons (provision for nine and one temporary relief).

(c) African.

12 Clerks.
1 Laboratory Assistant.
11 Hospital Assistants, 1st Grade.
5 Hospital Assistants, Junior Grade.
177 Dispensers and Probationers.
19 Sanitary Inspectors.
40 Vaccinators.
19 Medical Store Assistants, Packers, etc.
5 Messengers.

A varying number of Hospital and Dispensary attendants and Sanitary Labourers averaging 264.

Principal appointments, promotions, changes, etc., made during the year:—

Appointments.

	Date.
Dr. W. T. C. Berry, Medical Officer	24-1-36
Dr. A. T. D. Whitfield, „ „	6-7-36
Miss E. Irving, Nursing Sister	25-9-36
Miss M. Gibson, „ „	23-10-36
Miss S. Barber, „ „	18-12-36
Mr. F. L. Chapman, Sanitary Superintendent	24-1-36

Asiatics.

Jemadar Lachhman Das, Sub-Assistant Surgeon, I.M.D.	8-1-1936
Jemadar Sohan Singh Pannum, Sub-Assistant Surgeon, I.M.D.	4-3-1936

Africans.

Mr. T. H. K. Chirwa, Junior Hospital Assistant	1-1-1936
Mr. J. B. Wachepa, „ „ „	1-1-1936
Mr. G. Ndovi, „ „ „	1-1-1936
Mr. R. C. Undi, „ „ „	1-1-1936
Mr. G. Nyirenda, „ „ „	1-1-1936

Acting Appointments.

Miss N. M. Cremen, M.B.E., Nursing Sister, as Matron from 13-5-1936 to 31-12-1936.

Transfers.

Mr. F. E. Weaver, Sanitary Superintendent, transferred to Uganda with effect from 23-1-1936.
Miss S. Johnson, Nursing Sister, transferred to Northern Rhodesia with effect from 6-6-1936.
Dr. R. A. Newsom, Medical Officer, transferred to Northern Rhodesia with effect from 11-9-1936

Return From Secondment.

Dr. D. P. Turner, Medical Officer, arrived in Nyasaland from secondment for duty with the Medical Department, Somaliland, on 18-9-1936.

Retirement.

Miss K. R. Cameron, M.B.E., retired from the service with effect from 31-8-1936.

Resignations.

Miss E. F. McConachy, Nursing Sister, with effect from 27-11-1936.

Termination of Temporary Appointment.

Mr. P. D. Jhala, Civil Sub-Assistant Surgeon, with effect from 30-4-1936.

Deaths.

Mr. Grant Nyirenda, African Junior Hospital Assistant, died at Lilongwe on 29-11-1936.

(B) LIST OF ORDINANCES, ETC., ENACTED DURING 1936 AFFECTING PUBLIC HEALTH.

1936.

ORDINANCES.

29-4-36. No. 3 of 1936. Medical Practitioners and Dentists Amendment Ordinance, Cap. 84.
29-4-36. No. 8 of 1936. Waterworks Amendment Ordinance, Cap. 59.
31-10-36. No. 29 of 1936. Nursing Sisters Retiring Allowances Amendment Ordinance, Cap. 28.
31-10-36. No. 32 of 1936. Waterworks Amendment No. 2 Ordinance, Cap. 59.
31-10-36. No. 33 of 1936. Public Health Amendment Ordinance, Cap. 73.

RULES, ORDERS, NOTICES, ETC., 1936.

2-1-1936. Sanitary Boards Ordinance, Cap. 20: Rules, Port Herald Sanitary Board.
2-1-1936. The Townships Ordinance, Cap. 21: Rules, Town Council Election Rules.
27-2-1936. The Sanitary Boards Ordinance, Cap. 20: Rules, Cholo Sanitary Board.
17-5-1936. The Sanitary Boards Ordinance, Cap. 20: Constitution of Ntaka-taka Sanitary Board.
7-5-1936. The Sanitary Boards Ordinance, Cap. 20: Rules, Dowa Sanitary Board.
17-7-1936. The Townships Ordinance, Cap. 21: Zomba Town Council Bye-Laws.
20-8-1936. The Townships Ordinance, Cap. 21: Zomba Town Council Bye-Laws.
20-8-1936. The Sanitary Boards Ordinance, Cap. 20: Rules, Fort Manning Sanitary Board (Native Beer) 1936.
20-7-1936. The Sanitary Boards Ordinance, Cap. 20: Lilongwe Sanitary Area Boundary.

(C) FINANCIAL.

The total expenditure for 1936 was £48,035 5s. 7d., an increase of £555 4s. 5d., on the expenditure for 1935.

The approved expenditure for the Department for 1936 was £51,190.

In 1935, an analysis of the expenditure of the Department for the year revealed the following figures:—

(i) Expenditure on central administration, indivisible expenditure, salaries, transport, passages, etc.	...	...	...	£	s.	d.
			...	18,431	3	9
(ii) Expenditure on native services	...		...	21,614	7	0
(iii) Expenditure on non-native services	...		...	7,434	10	5
Total				£47,480	1	2

The total revenue of the Department was £1,843 14s. 6d. the amount being made up as follows:—

				£	s.	d.
(a) Hospital fees	...	...	...	1,359	12	11
(b) Sale of drugs, etc.,	...	...	...	484	1	7

From the unallocated stores, 5,271 bottles of 100 tablets of dihydrochloride of quinine and 354 packets of quinine bisulphate were sold to the general public, the amount realised being £945 17s. 3d. In 1935 the amount realised from the sale of quinine was £893 11s.

The actual details of the expenditure of the Medical Department for 1936 were as follows:—

		£	s.	d.
Approved and Supplementary Estimates 1936	...	51,190	0	0
Actual Expenditure, 1936:—				
(a) Personal emoluments		31,680	12	4
(b) Other charges		16,198	10	5
(c) Special expenditure—tsetse-fly research	...	161	2	10
Total	...	<u>£48,035</u>	<u>5</u>	<u>7</u>

In 1930, the expenditure was £42,157 5s. 3d. and the total number of patients treated at hospitals was 70,645 and 159,984 at rural dispensaries compared with 132,812 at hospitals and 301,738 at rural dispensaries in 1936.

The increase in expenditure being 14 per cent. while the increase in patients is approximately 86.5 per cent.

SECTION II. PUBLIC HEALTH.

(A) GENERAL REMARKS.

Changes of Staff.

During the year Dr. R. A. Newsom was transferred to Northern Rhodesia. Dr. W. T. C. Berry and Dr. A. T. D. Whitfield joined the service. Miss Cameron, Matron, retired after 17 years service in this Protectorate.

From a statistical point of view the work performed by the Department during the year may be considered to be satisfactory.

Considerable departmental re-organization was in progress and in the districts definite emphasis was laid on the preventive side of medicine while the standard of the curative side was well maintained.

Training of Africans, which, in the writer's opinion, is the most important problem to be dealt with in a poor and backward country such as Nyasaland, has been placed on a firmer basis, and the African Hospital at Zomba has become, so far as funds and staff permit, a teaching institution.

Two medical officers and two European nursing sisters (one of whom has been trained in maternity and child-welfare work and one as a sister-tutor) were posted there for duty and a definite programme of training both for male dressers and for female native nurses has been embarked upon.

The scope of the work at this hospital has been enlarged to include, a venereal clinic, an infant-welfare and maternity clinic, an X-ray department, an up-to-date surgical unit and a laboratory under a trained pathologist.

In the districts medical officers have been encouraged to visit the rural dispensaries more frequently, to make themselves acquainted with rural conditions and to carry out active propaganda in hygiene and sanitation upon every occasion; medical surveys, school inspections, visits to estates where labour is employed, are now part and parcel of a medical officer's routine duty.

Medical officers are also required to devote as much time as possible to training their native staffs and to that end the work at the rural dispensaries has been standardized, a handbook has been issued departmentally indicating those diseases which can be treated at dispensaries and those which should be dealt with at the nearest hospital, treatment has also been standardized and simplified and gradually the old, ignorant and useless staff is being weeded out.

Unfortunately, progress has been slowed down by the occurrence of more than the usual number of casualties amongst the European personnel—no reserves were available as financial circumstances permitted of the engagement of staff sufficient only to carry on in the absence of serious sickness, but made no allowance for emergencies being dealt with satisfactorily.

The necessity for the provision of staff slightly in excess of actual requirements was clearly demonstrated.

Two Medical Conferences were attended by members of the Department, during the year, one was the Conference on 'Co-ordination of General Medical Research' held at Nairobi in January and the other was the first meeting of the 'Standing Medical Research Committee for East Africa' and the 'Conference of Directors of Medical Services of East Africa Territories' at Entebbe in August.

Fortunately no serious epidemics menaced the health of the population of the territory, the epidemic of smallpox which had raged with diminishing force for the last seven years almost completely died down.

Rabies continued to be a source of unrest throughout the Protectorate and numbers of persons who had been exposed to infection very rightly took advantage of anti-rabic treatment.

Medical surveys were continued, although owing to sickness amongst the staff, not so much work was done as in the previous year. It was found possible, however, to detail a medical officer to tour a district which had probably never before been visited to any extent by a doctor; a short *resumé* of the work performed is included as appendix IV to this Report.

An effort was made in every district to co-operate with the planters in their endeavours to better the conditions of employed labour, medical officers, having obtained permission, visited estates and proffered advice with regards to general sanitation, housing and feeding, the co-operation of the Department was welcome and in very many cases steps were taken to make the improvements suggested. There is, of course, room for further improvement in labour conditions on the majority of estates. The matter is discussed rather more fully in a later chapter, *vide*, Section III. (iv).

The Native Welfare Committee, formed towards the latter part of 1935, continued to function and was able, in an advisory capacity, to be of assistance to Government, considerable inter-departmental co-ordination was secured, especially in the training of Africans and with its help a comprehensive syllabus was drawn up for the training of the village welfare-workers who were admitted to the Jeanes' school towards the end of the year.

It is gratifying to see that this scheme, envisaged by this Department, *vide*, Annual Report, 1933, page 31, is now in being.

Village re-construction work was carried out wherever possible and particularly notable work was performed in the Fort Manning district and one of the members of the Department, who was chiefly responsible, obtained official recognition and was included in the King's Birthday honours. Another officer of the Department during the year rendered himself a more useful member of the service by obtaining during his leave the degree of F.R.C.S. (Edin.).

Medical Assistance to Non-Official Bodies.

As usual Government was able to grant to the missions undertaking leprosy work the sum of £900. Three mission infant-welfare and maternity clinics were also assisted to the extent of £700.

The grant of £315 to the Blantyre Mission hospital for the treatment of natives sent to this hospital by Government was continued, as was also the small annual grant of £50 for the treatment of Asiatics.

Bona fide planters were assisted by being allowed to purchase at cost price drugs and dressings from the medical department.

Free issues of drugs for the treatment of leprosy and hookworm were made, to the extent of some £54, to accredited institutions undertaking this work.

Returns for the Year.

The numbers of in- and out-patients treated during the year is compared in the following table with the numbers treated for previous years:—

EUROPEANS:	1932	1933	1934	1935	1936
In-patients	189	178	188	186	165
Out-patients	1,079	1,217	1,308	1,693	1,685
AFRICANS AND OTHERS:					
In-patients	6,325	7,322	9,044	10,052	9,757
Out-patients	308,862	353,344	375,852	436,906	435,489*

*Note.—This figure represents the sum total of African in- and out-patients.

The incidence of the diseases treated at Government hospitals during the year is shown below:—

Incidence of Diseases According to Groups.

	Hospitals	Rural Dispensaries
1. Epidemic, Endemic and Infectious Diseases	14,319	19,159
2. General Diseases not mentioned above	1,273	632
3. Affections of the Nervous System	10,797	24,747
4. Affections of the Circulatory System	312	24
5. Affections of the Respiratory System	18,017	45,362
6. Diseases of the Digestive System	28,833	61,920
7. Diseases of the Genito-urinary System	4,471	2,743
8. Puerperal State	168	7
9. Affections of the Skin and Cellular Tissues	31,148	75,737
10. Diseases of Bones and Organs of Locomotion	4,509	10,244
11. Malformations	3	—
12. Diseases of Early Infancy	16	—
13. Affections of Old Age	155	—
14. Affections produced by External Causes	18,526	51,601
15. Ill-defined Diseases	2,889	9,562
Total	135,436	301,738

The following diagrams, I—IV, show the incidence of the epidemic, endemic and infectious diseases, the proportions of these diseases treated at hospitals and the proportion of in-patient deaths amongst the diseases in Group I. and in all groups of diseases.

DIAGRAM I.

Showing the proportion of infectious, systemic and other diseases treated at government hospitals (excluding rural dispensaries).

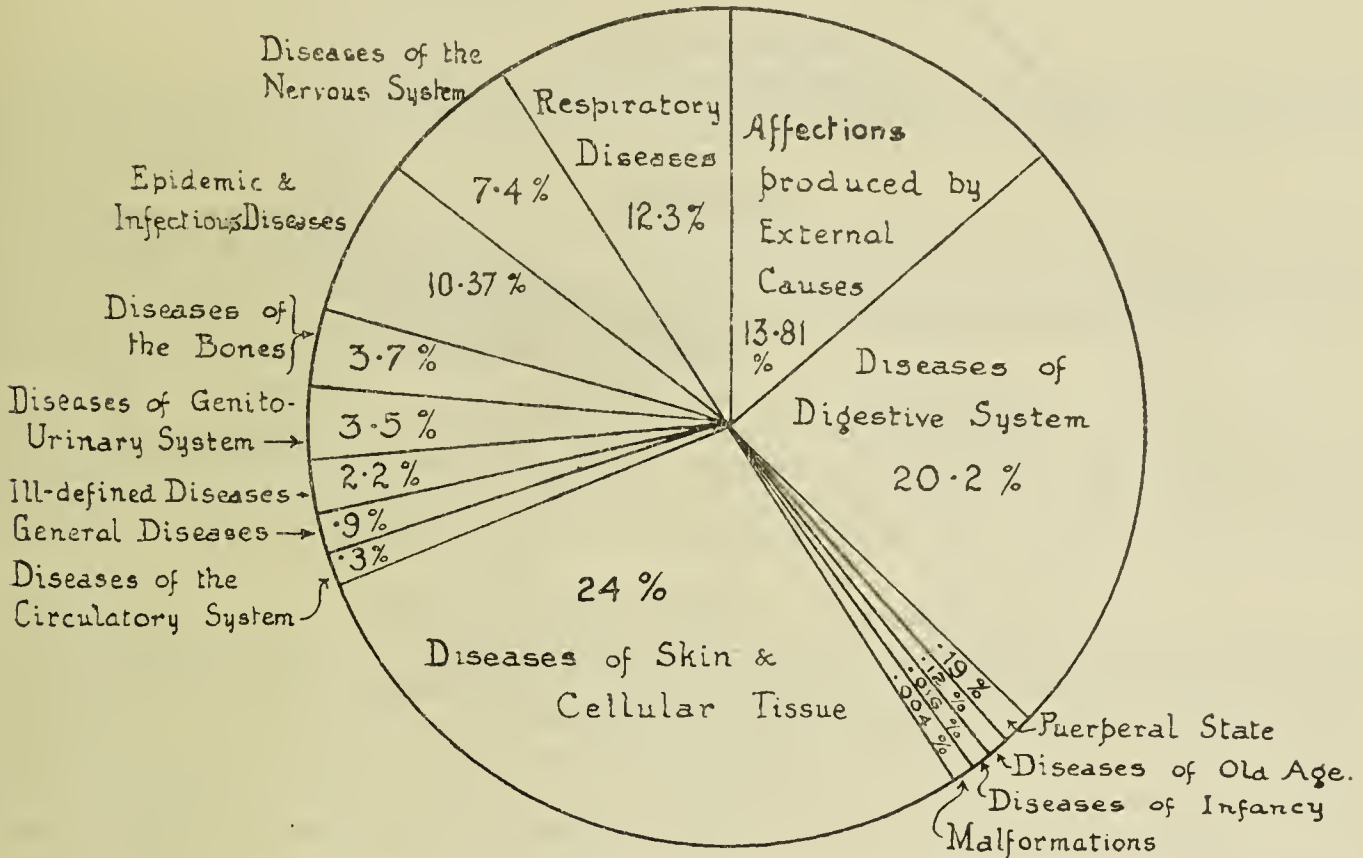


DIAGRAM II.

Showing the proportion of in-patient deaths amongst the groups of diseases. Total in-patient deaths, 253, (2.55 per cent. of all in-patients).

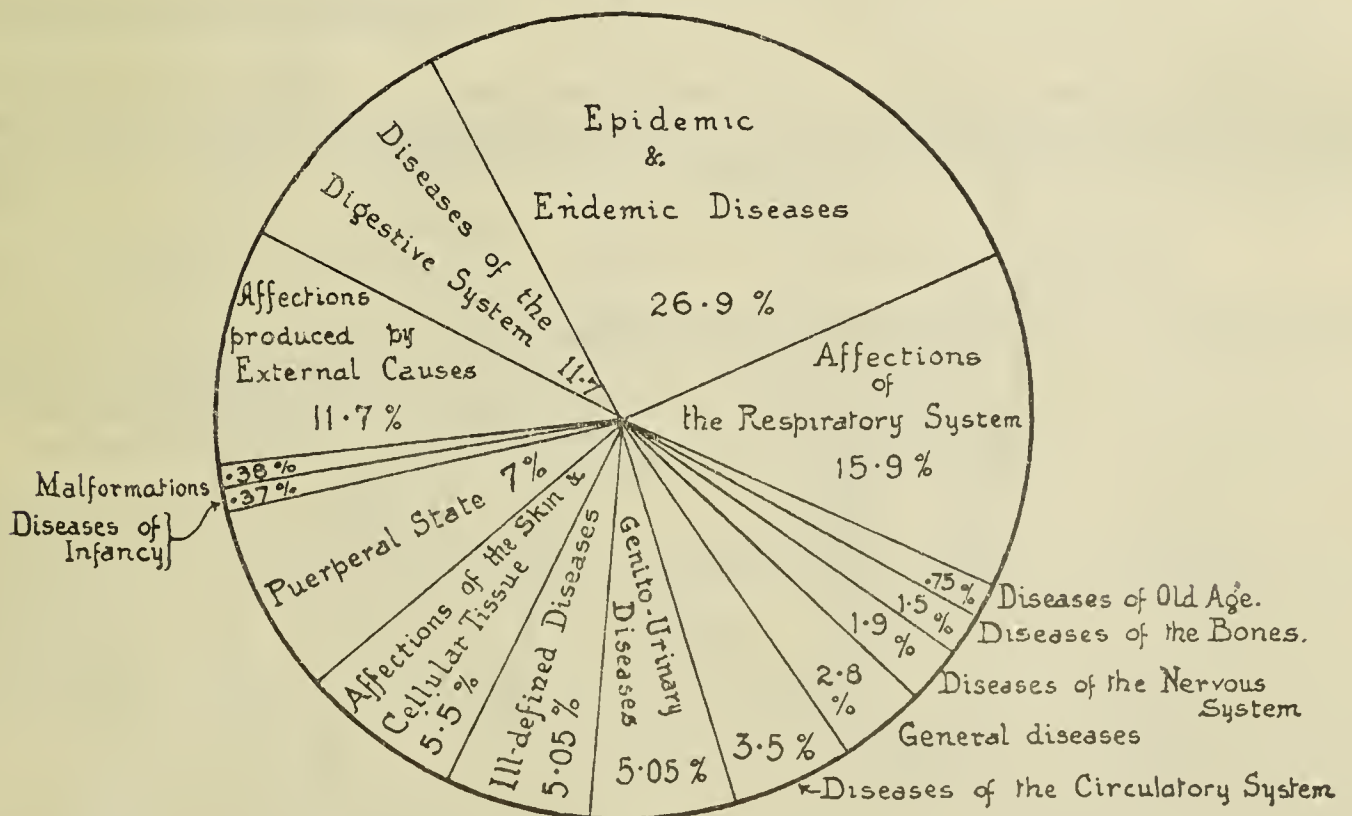


DIAGRAM III.

Showing the proportion of the diseases in Group I. treated at government hospitals (excluding rural dispensaries).

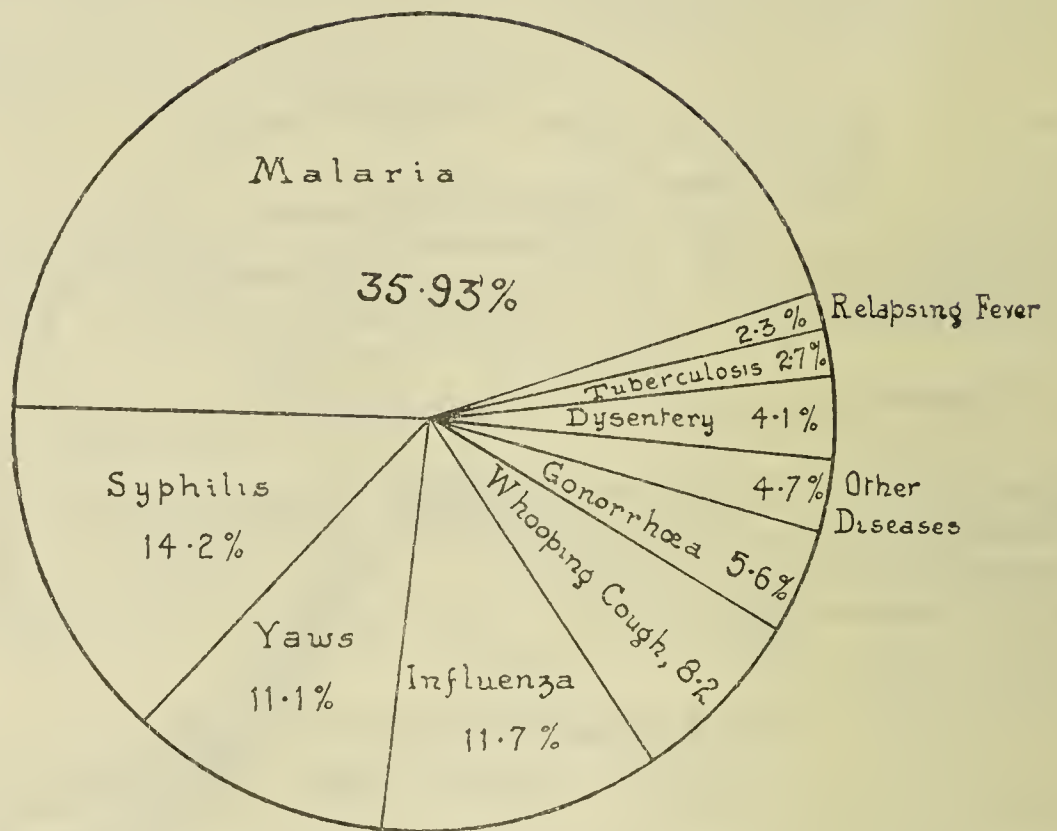
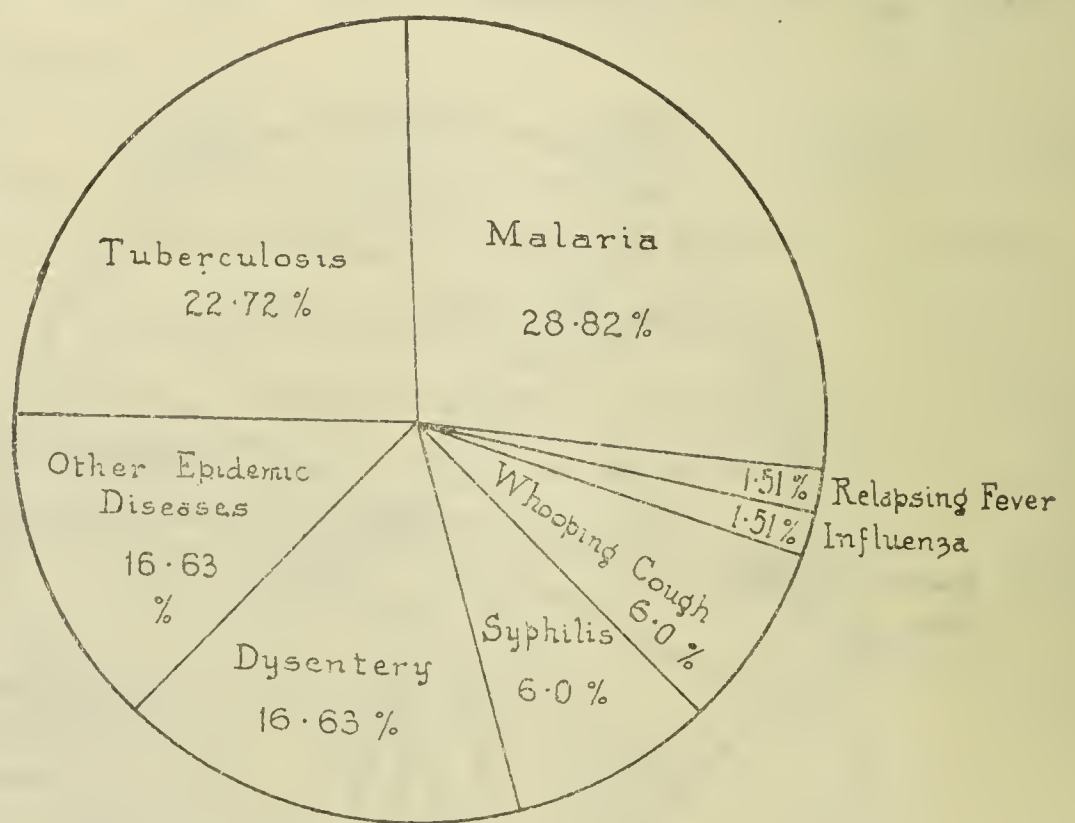


DIAGRAM IV.

Showing the proportion of deaths from diseases in Group I. occurring at government hospitals. Total in-patient deaths due to epidemic, endemic and infectious diseases, 65.



(B) GENERAL DISEASES.

Malignant Disease and Tumours.

There were 37 cases of malignant disease reported during the year as compared with 31 cases for 1935 ; there were also 119 cases in which the tumours were non-malignant. The number of tissues sent in to the pathological laboratory increased and some 60 specimens were examined as compared with 40 for last year.

The subject is dealt with more fully in the Pathologist's report which is incorporated in the scientific section of this Report.

Deficiency Diseases.

A total of 100 cases were reported from the various hospitals, dispensaries, prisons and asylums throughout the country, of this number there were 43 cases of pellagra, 56 cases of scurvy and one case of rickets in a child.

With regard to the cases of scurvy, these were all reported from one district by a rural dispenser, enquiries made after the report failed to reveal any conditions which might predispose to such an outbreak or to disclose any symptoms which would clinch the diagnosis and it must be concluded that in this instance the report was inaccurate.

With regard to the case of rickets, this disease occurred in a native child whose history is interesting and whether or not the case is a true rachitic one, there seems to be no doubt that the condition was either attributable to or was aggravated by a deficiency of some of the essential food factors. The notes prepared by the medical officer in charge of the case are as follows :—

“ The child was breast-fed and healthy up to the crawling stage but did not walk for a ‘ long time ’. The mother states there was a famine but that she was able to buy a sufficiency of food (doubtful ?). Subsequently the child walked, but periodically stopped walking owing to pains in the shafts of the long bones. The deformity is not completely typical, there is a rachitic rosary and a uniform sabre formation of the tibiae, the femurs are affected and the bones of the forearms bowed. Possibly one is dealing with a child whose processes of assimilation are deficient, otherwise how can one explain the fact that the disease is still active despite better conditions and plenty of sunlight. Improvement has taken place in hospital on cod liver oil and additional green foods.”

The Medical Officer, Dedza, reports that while on tour in the Lake shore district he was particularly struck with the large amount of coughs, colds and respiratory diseases which he encountered amongst the local inhabitants, to a large extent he attributes the prevalence of these conditions to the result of a famine experienced earlier on in the year. He states that such conditions, in his opinion, are influenced by a reduction of vitamins A. and C. he mentions that although oranges, lemons and tomatoes are grown by the native they are little used as articles of diet but rather as articles of commerce with Europeans. The Medical Officer, Fort Johnston, mentions that he has noticed that ulcers treated with dry protective dressings only and given cod liver oil and quinine heal as readily as cases treated with local applications.

(C) COMMUNICABLE DISEASES.

(a) Mosquito and Insect-borne Diseases.

Malaria and Blackwater Fever. Seven cases of blackwater fever were treated at hospitals and one case was attended to in the district, 5 of these occurred amongst Europeans with three deaths, two of these occurred amongst Asiatics with one death and one case amongst the native population with no death.

Malaria.—The chief vectors have been found to be *A. gambiae* and *A. funestus*.

The total number of cases reported from hospital and rural dispensaries was 16,010, these cases were differentiated as follows :—

		Europeans		Asiatics and Africans		Total	
		Cases	Deaths	Cases	Deaths		
Benign Tertian	...	12	—	301	—	...	313
Quartan	...	7	—	135	—	...	142
Sub-Tertian	...	32	—	903	10	...	935
Cachexia	...	3	—	63	—	...	66
Blackwater	...	5	2	3	1	..	8
Undefined	...	123	—	14,423	1	...	14,548
Grand Total						...	<u>16,010</u>

From laboratory findings, the predominant species would appear to be *P. falciparum* and the least common *P. vivax*.

Of 3,229 blood films examined 34 per cent. contained parasites :—

<i>P. falciparum</i>	...	...	72 %.
<i>P. malariae</i>	...	...	21 %.
<i>P. vivax</i>	...	...	3 %.
<i>Indeterminate</i>	...	...	3 %.

Gametes were present in 4 per cent. of all positive films.

(b) **Infectious Diseases.**

Yaws.—1,368 cases were treated at the native hospitals and 2,862 cases were attended to at the rural dispensaries, making a total of 4,230 as compared with 4,400 cases in 1935.

Cerebro-Spinal Meningitis.

During the year eleven cases were treated in native hospitals, but an unknown number of cases occurred in the districts.

Spasmodic outbreaks of this disease are reported from time to time, the outbreaks are usually confined to one or two villages and a general spread of infection does not appear to occur.

One small outbreak occurred at a mission station and the first three cases were noticed among the girls in one of the dormitories, two European lady teachers, who were in close contact with these girls, afterwards developed the disease and one unfortunately died. No further spread took place and no cases were reported in the adjacent villages.

The Medical Officer, Zomba, in dealing with a small outbreak in the Zomba district draws attention to the similarity between this disease in its early stage and cerebral malaria.

Enteric groups of fevers.

Very few cases belonging to this group of fevers were reported during the year. Six cases occurred amongst Europeans and one case was reported amongst the native population.

Laboratory findings showed five positive agglutinations, viz.,

three, *B. typhosus*.
one, *B. para-typhosus A*.
one, *Bruc. melitensis*.

One European case with a typical rash, loose stools, and slight temperature gave a history of having had the disease during the Great War, this particular illness lasted 10 days.

Dysentery.—The total number of cases reported was 1,429 as compared with 2,337 in 1935 and 2,135 in 1934.

In Zomba where amoebic dysentery has been particularly prevalent for the last few years 37 cases occurred as compared with 29 in 1935. All the cases, with the exception of three, were mild in character and the majority occurred during the cold season when fly-breeding is at its lowest.

In spite of departmental warnings most of the compounds of European residences in Zomba harbour large numbers of native women and children whose ideas of sanitation are somewhat hazy, the incidence of the disease must be affected to a considerable extent by the close propinquity of these natives.

Out of some 6,000 specimens of stools of Africans examined for intestinal parasites, 4.7 per cent. were found to contain *Entamoeba histolytica*.

The transmitting agent or agents of this disease have not been identified with any certainty. Cockroaches of which there is a plentiful supply in most houses were examined and although *Entamoeba blattae* was commonly observed, in no case were cysts of *E. histolytica* found. Considerable numbers of house flies were examined with negative results. It is concluded that the disease is spread by cysts being carried in water or in dust or by human carriers.

Tuberculosis.—The number of cases of all forms of this disease reported during the year is 246.

In the opinion of most medical officers, this disease is on the increase, surgical as well as pulmonary tuberculosis is met with to a considerable extent at all hospitals.

The surgical cases usually respond well to operative treatment.

In section III. (IV) some figures are given with reference to the morbidity of the labour returning from Southern Rhodesia these are disquieting as during the period, 1932-1936 out of a total of 611, 64 or 10.4 per cent. were re-patriated on account of tuberculosis.

It is conceivable that the spread of this disease may be influenced by this factor as it is not known, in the absence of any registration system, or of medical examination how many natives are returning every year from work in the surrounding territories, particularly from South Africa and Southern Rhodesia, and what percentage of these are suffering from tuberculosis ; it was estimated by the Committee on Emigrant Labour that some 31,145 Nyasaland natives entered or passed through Southern Rhodesia looking for work in 1934.

The control of this disease is difficult and it is obvious that unless measures are instituted there is considerable danger of this disease proving a real menace in Nyasaland.

An attempt has already been made in certain districts to localize infectives and to identify tuberculized children by the use of Moro's ointment, these investigations will be continued.

Smallpox.—183 cases were reported during the year, these were all sporadic cases, the epidemic which commenced in 1928 having almost ceased: during 1935, there were 170 cases with 11 deaths.

One case of alastrim was reported.

VACCINATION ANNUAL REPORT FOR THE YEAR 1936.

Name of District	Successful	Modified	Unsuccessful	Not seen	Total
Blantyre ...	1,766	941	831	1,899	5,437
Chikwawa & Neno ...	13,164	4,951	2,837	1,616	22,568
Chinteché ...	1,005	901	592	369	2,867
Chiradzulu ...	3,047	1,211	989	1,135	6,382
Cholo ...	8,729	8,373	944	—	18,046
Dedza ...	4,954	2,439	1,125	661	9,179
Dowa ...	1,536	982	807	234	3,559
Fort Johnston ...	3,398	2,398	563	795	7,154
Fort Manning ...	3,885	2,959	1,236	—	8,080
Karonga ...	8,090	1,062	1,151	—	10,303
Kasungu ...	1,689	584	443	517	3,233
Kota-Kota ...	3,241	1,908	1,568	—	6,717
Lilongwe ...	6,954	1,444	710	137	9,245
Liwonde ...	3,121	743	1,466	695	6,125
Mlanje ...	15,137	11,390	7,764	42,095	76,386
Mzimba ...	4,587	2,757	1,720	902	9,966
Ncheu ...	5,648	1,900	1,646	1,060	10,254
Port Herald ...	8,045	3,290	2,057	1,519	14,911
Zomba ...	3,156	1,234	732	551	5,673
TOTAL ...	101,152	51,467	29,281	54,185	236,085

Venereal Diseases. 2,488 cases of venereal disease were treated at native hospitals as compared with 2,287 cases in 1935. 705 cases were reported at rural dispensaries.

Dr. Turner in his survey in the Chinteché district examined 1,700 persons and found 123 cases of clinical syphilis and 66 cases of gonorrhoea, these figures are not included in the above totals.

There is no doubt that many women, especially in rural areas, suffering from the disease are untreated owing to their reluctance to attend hospitals and out-patient departments where there are no European or native nurses or any lady medical officers.

The spread of the disease is commonly attributed to infected labour returning from work abroad. During the year 1,472 deportees from South Africa passed the Senior Medical Officer's inspection at Blantyre, of this number 5 only were found to be suffering from syphilis and 7 from gonorrhoea.

At Blantyre and at Zomba, venereal clinics have been established with fairly satisfactory results, the chief difficulty being to persuade patients to attend for more than 2 or 3 injections.

At the same time and in spite of the difficulties it is satisfactory to record that of 91 new cases treated at Blantyre, 40 were women.

Measles and German Measles. 1,191 cases were reported during the year. Measles is widespread throughout the territory and does not perhaps attract the attention it deserves.

It may appear either sporadically or in epidemic form. German measles is now recognised and has occurred in various parts of the Protectorate, some of the more intelligent natives remember outbreaks of 'measles' which killed no one and other outbreaks which killed many.

A number of the outbreaks of measles are reported after many deaths have occurred and there is no doubt that in conjunction with whooping cough it is a very serious disease.

Trypanosomiasis.

Six cases were reported during the year. One relapse case occurred at Fort Johnston in a patient who had been reported on during the previous year and had been considered to be a 'carrier'.

Two cases occurred in the Kota-Kota district one of which was discovered and confirmed microscopically by a rural dispenser.

Leprosy.—There are in this country 12 clinics all administered by missions, at which lepers are treated either as in-patients or out-patients or both. All of them receive money grants from Government in proportion to the number of cases treated.

Arrangements in regard to staff, housing and maintenance of patients at the various clinics vary considerably. Some have a doctor in charge with a qualified nurse and native subordinates, the majority are in charge of a qualified nurse only. No exact information is available with regard to the number of lepers in the country, but the majority of the staff in charge of these leper clinics are of opinion that leprosy is rather on the 'increase' than on the decrease. In an investigation in the Karonga district, 4,589 persons were examined, village by village and 22 were found to be suffering from leprosy. 'Nodular' cases are considered to be the most difficult to treat while 'anaesthetic' cases respond more readily to treatment, native staff are usually obtained from lepers themselves. A few cases are thought to have been cured, at any rate the disease is considered to have been arrested.

One mission suggests that coercion might be used in order that treatment and segregation should be made compulsory. Voluntary segregation is, however, practised in some districts.

Leprosy treatment is confined to the use of alepol, hydnocreol, potassium iodide, and trichloracetic acid, one mission uses and has great faith in the internal administration of iodine.

Without in any way wishing to disparage the magnificent and unselfish work performed by the missions, yet it is doubtful whether, without properly qualified staff, experienced in leprosy treatment and control, any real headway is being made; all one can say is that by the means adopted, the lives of many unfortunate creatures are made more happy and pleasant, the dangers of the spread of the disease are lessened and its ravages held at bay.

Housing provided for the lepers under treatment varies from wattle-and-daub huts, to well built red-brick structures. At some centres the lepers have been encouraged to grow their own food supplies, at others food is bought in bulk by the mission concerned. One or two of the missions have started schools for the lepers and though the majority of lepers may not be able to gain much knowledge from the instruction given, it is of great benefit to them to have their interest aroused and their minds distracted from their unfortunate physical condition.

The numbers under treatment at the various centres, and the admissions, discharges and deaths were as follows:—

					In-patients		Admissions		Discharges		Deaths	
					M	F	M	F	M	F	M	F
Bandawe	...	...	...	...	26	37	1	0	0	0	1	1
Domasi	...	...	...	...	9	3	8	0	6	1	3	2
Likoma	...	...	...	...	6	7	0	0	2	0	0	0
Likwenu	...	...	...	...	52	11	28	10	21	5	2	1
Livingstonia	...	...	...	...	12	6	0	0	0	0	0	0
Loudon	...	...	...	...	10	6	2	0	0	0	1	0
Malamulo	...	...	...	...	144	59	41	19	79	36	5	0
Malindi	...	...	...	...	21	11	0	2	2	1	1	1
Mkhoma	...	...	...	...	4	4	1	0	0	0	0	0
Mua	...	...	...	...	33	22	10	4	2	4	2	0
Mwami	...	...	...	...	29	16	5	2	4	5	0	0
Utale	...	...	...	...	77	41	28	20	11	10	4	2
Total	...	...	...	...	423	223	125	57	127	62	19	7

		M.	F.
Out-patients treated at mission clinics		31	27
" " " " government dispensaries		15	

It is not known how many lepers in the infective stage of the disease are at large and receiving no treatment, but advantage will be taken of the next general census to ascertain as nearly as possible what the number actually is. In previous reports it has been stated that compulsory segregation and treatment is in this country impracticable except at great expense, yet under a voluntary system there will always be many sufferers from the disease who either refuse to enter a treatment centre or leave it after a short period of treatment.

The government annual subsidy (£900) is divided up amongst the various missions on the basis of 1 penny per day per patient, but the subsidy has remained at the same figure for some years whereas the number of lepers under treatment has increased, so that the subsidy barely suffices to cover the cost of maintenance on the basis mentioned. One mission has refused to admit additional patients on the plea that it could not afford the extra expense involved, and there is no doubt that if all lepers in the infective stage were admitted to one or other of the leper centres the government subsidy would have to be increased materially.

It is to be noted that "discharges" include lepers who desert from the clinics, and others who are sent away for reasons other than because they are apparently cured. The total of "discharges" does not therefore represent cured or quiescent cases.

(D) VITAL STATISTICS.

(I) GENERAL AFRICAN POPULATION.

Records of births and deaths have been collected in the Fort Manning district since the beginning of May 1933, and from that date to the end of 1936 there have been in a population of approximately 35,000, a total of 7,982 births and 3,439 deaths. Females predominate both in respect of births and deaths, about 80 per 1,000 in respect of deaths, and 20 per 1,000 in respect of births. The excess of female deaths is evident at all four age periods but particularly so in the adult group.

The various rates for the year 1936 are as follows:—

Birth-rate	= 46.8 per 1,000 of population.
Death-rate	= 21.8 „ „ „ „
Infantile mortality	= 82.3 per 1,000 live births.
Still-birth rate	= 87.0 „ „ „ „

Percentage of deaths in age groups :

0-1 years	= 17.3 %	} 27 per 1,000 of population under 5 years.
1-5 „	= 12.7 %	
5-15 „	= 27.7 %	— 37.5 per 1,000 between 5 and 15.
Adults	= 42.3 %	— 16.9 per 1,000 over 15.

There were 41 twin births producing 36 male and 46 female children of whom seven males and six females died. In 10 cases both children were males, and in 15 both were females.

Infant deaths are attributed mainly to malaria, diarrhoea, bronchitis and pneumonia, but the causes of infantile mortality require investigation, for relatively few infants are seen either before or after death by any qualified person. There can be little doubt but that improper feeding is an important contributory cause.

The recording of births and deaths in the Karonga district had to be given up or at least curtailed, owing to the fact that it was found impossible for the medical officer to give sufficient supervision to the native recording-officers working at a distance from his station. It is much to be regretted that the collection of vital statistics is confined to one small district but the unaided resources of the medical department do not permit of further extension.

It is difficult if not impossible to assess the effectiveness of the work of the Medical Department in regard to the general health of the population except by reference to its vital statistics. Medical surveys it is true give a clear indication of the extent of invalidity, and improvement in the survey figures would no doubt indicate that the various preventive measures were becoming effective; but the scope of medical surveys is necessarily small, and affects only a minute proportion of the population in any one year.

(II) ASIATICS.

The figures for the Asiatic population show a slight increase, the estimated population being for 1935, 1,400 and for 1936, 1,558.

During the year there were 71 births and 18 deaths. The causes of death were as follows:—

				Male		Female	
				Adults	Infants	Adults	Infants
Blackwater fever	...	...		1	—	...	—
Cancer of rectum	...	...		1	—	...	—
Chorea	...	...		—	—	...	1
Asphyxia neonatorum	...	...		—	1	...	—
Hypostatic pneumonia following fractured spine	...	...		1	—	...	—
Accidental injury—motor car	...	...		2	—	...	—
Lobar pneumonia	...	...		2	—	...	—
Meningococcal meningitis	...	...		1	—	...	1
Myocarditis	...	...		1	—	...	—
Broncho-pneumonia	...	...		—	2	...	1
Pulmonary tuberculosis	...	...		1	—	1	—
Post-abortion sepsis	...	...		—	—	1	—
Total	...	...		10	3	2	3

(III) EUROPEAN GENERAL POPULATION.

The total European population was estimated at 1,838 an increase of 57 as compared with last year.

During the year 35 births and 18 deaths were recorded, the causes of death were:—

			Male					Female	
			Adults	Infants				Adults	Infants
Bacillary dysentery	...	...	—	1	...	...	...	—	—
Blackwater fever	...	...	3	—	...	...	...	1	—
Cardiac failure, chronic asthma and bronchitis	...	...	1	—	...	...	...	—	—
Cerebral haemorrhage	...	...	1	—	...	...	...	—	—
Cerebral malaria	...	...	1	1	...	...	...	1	—
Coronary thrombosis	...	...	1	—	...	...	...	1	—
Epidemic cerebrospinal meningitis	...	...	—	—	...	...	...	1	—
Accidental injury (motor car)	...	...	—	—	...	...	...	1	—
Degenerative myocarditis	...	...	—	—	...	...	...	1	—
Malaria	...	...	1	—	...	...	...	—	—
Myocardical degeneration, broncho-pneumonia	...	...	1	—	...	...	...	—	—
Accidental injury by fall	...	...	1	—	...	...	...	—	—
Total	...	...	10	2	...	...	...	6	—

(IV) EUROPEAN OFFICIALS.

The following table shows the sick, invaliding and death rates of the European officials:—

			1933	1934	1935	1936
Total number of officials resident	...	...	282	276	266	269
Average number resident	...	...	202.6	205.7	205.3	205.7
Total number on sick list	...	...	105	125	113	93
Total number on days on sick list	...	...	1,808	1,708	1,781	2,018
Average daily number on sick list	...	...	4.9	4.68	4.88	5.51
Percentage of sick to average number resident	...	...	2.4	1.66	2.36	2.18
Average number of days on sick list	...	...	17.2	13.66	15.6	21.7
Average sick time to each resident (days)	...	...	8.9	9.3	8.77	9.79
Total number invalided	...	...	10	7	6	4
Percentage of invaliding to total residents	...	...	3.47	2.53	2.25	1.86
Total deaths	...	...	2	0	0	1
Percentage of deaths to total residents	...	...	0.7	0	0	0.4

The causes of invaliding were:—

1. Sciatica.
2. Enlargement of liver.
3. Chronic gastritis.
4. Tuberculous infection of kidney.

(V) NATIVE OFFICIALS AND NATIVE TROOPS.

The native officials numbered 2,603 as compared with 2,457 in 1935.

The term 'native official' includes police and native troops, but excludes casual labour in receipt of less than ten shillings a month.

The prevailing disabilities and the number of days off duty are compared below with those of previous years.

			1934		1935		1936	
	No. of cases	No. of days off duty	No. of cases	No. of days off duty	No. of cases	No. of days off duty	No. of cases	No. of days off duty
Malaria	102	288	120	697	158	1,033	...	...
Influenza	91	594	35	184	85	392	...	...
Injuries	66	656	101	1,499	55	523	...	...
Respiratory affections	52	207	79	697	60	592	...	...
Dysentery	27	301	42	417	30	314	...	...
Venereal diseases	28	703	60	1,463	69	2,022	...	...

The causes of death were:—

Phthisis	...	1	Pneumonia	...	1	Enteric fever	...	1
Pericarditis	...	1	Wound, abdomen	...	1	Optic neuritis	...	1
Gas gangrene	...	1	Myocarditis	...	1	Myeloid leukaemia	...	1



I. and II.—Permanent water-course in Zomba before and after canalization. The retaining walls are of dry stone construction.



III.—Canalized water-couse showing method of stepping the bed of the stream to break the force of the water and prevent erosion.



IV.—Houses for the African staff recently constructed in Zomba African

The following table shows the sick, invaliding and death rates of native officials :—

	1935	1936
Total number of native officials ...	2,457	2,603
Total number on sick list ...	933	1,129
Total number of days on sick list ...	10,427	11,880
Average daily number on sick list ...	28.5	32.54
Percentage of sick to total number of officials	1.12	1.25
Average sick time to each patient (days)	11.20	10.52
Total number of deaths ...	17	9
Percentage of deaths amongst native officials	0.65	0.34

SECTION III. HYGIENE AND SANITATION.

(A) GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

As has been pointed out in previous annual reports, progress in measures of hygiene and sanitation is considerably impeded by the lack of trained African staff.

It is obviously impossible in the financial circumstances in which this Protectorate finds itself to provide for an adequate staff of trained Europeans, so it is more than ever necessary to take such steps as are possible to arrange for the training of as many Africans to work as dispensers, nurses, midwives and rural sanitary inspectors as the country can usefully absorb.

With regard to the employment of native rural sanitary inspectors, there are at present two European sanitary superintendents only and these officers have perforce been utilised almost entirely in the larger townships of Blantyre, Limbe and Zomba and have had little time to devote either to rural sanitation or to training duties.

While no startling progress can be recorded yet it is satisfactory to note that more and more native authorities are realising the benefits that accrue from living under better hygienic conditions.

The training of community or welfare workers at the Jeanes' centre commenced towards the end of the year, these welfare workers when trained will be apportioned to native authorities under whose auspices they will work.

The general bias of native education is now directed to an improvement in the present low standard of living and there is no doubt that the exhortations of the medical officers, Jeanes' teachers, rural dispensers and native sanitary inspectors backed up by such chiefs and headmen who have had the advantage of attending a course of instruction at the Jeanes' centre and combined with the routine instruction afforded at the schools, is having a direct and cumulative effect.

As an illustration of the progress being made, the marked improvement in the sanitary condition of certain villages under the control of enlightened native authorities or headmen is noticeable, in several instances native authorities have engaged and caused to be trained, sanitary policemen, whose duty is to see that orders made by the native authorities are carried out.

Such orders are, up to the present, of the simplest nature and usually for the following purposes; for the compulsory erection of latrines, for the siting of houses, for regulating the growing of high crops near houses, for stipulating that only certain water-supplies and bathing-places shall be used, for the sweeping up and collection of rubbish, etc., etc.

All the larger government stations are now provided with trained native sanitary inspectors and medical officers take every opportunity of visiting estates employing labour and advising and assisting European employers in the care and management of their labour.

Perhaps the most satisfactory progress in rural sanitation has been made in the Fort Manning district, where a system of itinerant inspectors who keep a register of all births and deaths has been introduced and where many villages have been reconstructed, water supplies improved, and a very appreciable "uplift" in sanitary conditions effected.

Some photographs are inserted on the opposite page illustrating ante-malarial measures and improvement of housing conditions in Zomba.

(I) PREVENTIVE MEASURES.

Malaria and Malaria Prevention.

The incidence of malaria in the group of epidemic, endemic and infectious diseases fell slightly viz., 35.93 per cent. as compared with 47.51 per cent. for last year.

Malaria is hyperendemic over the whole territory but varies from season to season.

The problem presented is such a vast one that the efforts of the Medical Department especially in rural areas can have but little effect in reducing the incidence. With regard to the townships a fairly satisfactory state of affairs may be said to exist, oil-spraying, drainage of pools and swamps, filling-in of holes, grass-cutting, etc., was effectively carried out, but perhaps

the most important progress has been made by the re-organization of the method of the inspections performed by native sanitary inspectors, more control has been exercised and more efficiency has been obtained. The small rivers and streams running through the townships provide the principal mosquito breeding-grounds and although stone channels are made as far as possible and to the extent that funds will allow, yet difficulties are encountered owing to breakages by heavy rains or to outlets of sub-soil water forcing their way through.

Another factor concerned in the control of breeding places is the presence of swampy areas, streams, etc., beyond the boundaries of the townships, the property-owners are unable to afford the large sums of money which would be necessary to ensure that the residents of the townships are not troubled by wind-borne mosquitoes from these areas.

Helminthic Diseases.

In a summary of the findings of the medical surveys performed during last year in the Southern Province 48 per cent. of the population of age group II. *viz.*, between 2 years and 10 years old, were found to be suffering from *S. haematobium* and about 35 per cent. with hookworm. At Fort Johnston (on the shores of Lake Nyasa and in the Southern Province) 76 per cent. persons of all ages were found to be infected with hookworm disease and 68 per cent. with schistosomiasis.

Two cases of cancer of the bladder supervening upon bilharzial infection were diagnosed and out of 6 appendices removed, two were heavily infected with *S. haematobium*.

In the Mlanje area, 22.7 per cent. of all cases of illness treated in the native hospital during the year were due to infection by either hookworm or bilharzia. As meat is little eaten and as it is well-cooked when available, no cases of tapeworm were treated in this district during the year.

It is surprising that so many of the cases, especially amongst the youths of the country, which on examination, are found to be infected with bilharzia, do not and have not complained of the disease or sought for treatment, as usually they are well aware of the fact that their urine, on occasion, contains blood.

Routine examinations of all prisoners admitted to the Central Prison, Zomba, and drawn from all parts of the Protectorate afforded useful information as it was found of 300 prisoners examined, 111 suffered from hookworm, 11 from ascaris, 38 from schistosomiasis and 1 from tapeworm.

(II) GENERAL MEASURES OF SANITATION.

(a) Frequent attention has been drawn in previous annual medical reports to the backwardness of rural sanitation. This backwardness may be attributed to some extent to the manner in which the department has developed, especially in the early days when the bias was towards the curative side of medicine.

To some but probably a lesser extent paucity of funds has been a difficulty.

In the year 1931, the amount expended on "sanitation" was £6,339, in the year 1936 it was practically the same and this in spite of the fact that many members of the sanitation staff receive annual increments of pay. Thus the amount of money available for preventive measures in the year 1936 is rather less than in 1931. This might be of no great importance for a fully-developed service whose organization was such as to meet all the sanitary needs of the population, but in a country which has barely started to develop a sanitary conscience the effect is to cramp if not to stifle the efforts for improvement.

The Native Welfare Committee has asked for authority to scrutinize the estimates of those departments whose activities are concerned chiefly and most directly with the natives, the idea being that the constitution of the Committee is such as to qualify it to express an authoritative opinion on the relative value of any new items of expenditure which may be advocated.

It is part of the policy of the Medical Department to develop "health units" in the rural areas, on the lines advocated in other countries; but the policy has so far made little progress. The health unit is to be centred on the rural dispensary, which by the addition of a native sanitary inspector, a midwife, and a child-welfare worker would in time become a really effective influence on the health of the community. The establishment of these centres means some increase in the departmental estimates, as additional staff has to be found and adequate supervision has to be provided.

No medical department worthy of its name or conscious of its duties is able to stand still. Retrogression is a necessary consequence of lack of progression.

Medical Surveys.

It is not proposed to analyse the results of the medical surveys held during the year to the same extent as was done for the surveys in 1935.

Medical surveys, as performed in this territory, have two main purposes in view, (a) to acquire information and knowledge of the districts, peoples, living-conditions, diets, physical conditions and morbidity, and (b) to function as a means of education and to accustom the people to the visits of the European doctor and to teach them to understand and appreciate European methods of treatment.

In order to give a general picture of rural health conditions obtaining in this territory, extracts from three different medical surveys are quoted below, the first I, was carried out in a native tobacco-growing area, where both the chiefs and their people were somewhat primitive and backward, and illustrates the difficulties encountered by the medical officer in carrying out propaganda work in such areas.

The second II, was made in a progressive area governed by a fairly well-educated and enlightened native authority and containing a fair proportion of European residents, this survey shows the progress made in sanitary matters under such favourable conditions.

The third III, was carried out at a village on the shores of Lake Nyasa and although this village is within a stone's throw of a centre which is being developed from a tourist point of view its inhabitants are lackadaisical and unprogressive in the extreme.

SURVEY NO. I. *Extract from the Medical Officer's report :—*

"Two small surveys in this district were held, one at Native Authority Masengera's village and the other at Native Authority Chitakula's village.

The first was hindered in some degree by the illness of the Native Authority who was suffering from pneumonia on our arrival. This Native Authority though recommended by the Administration was found to have very little authority with his villagers, having been newly-appointed.

It was found extremely difficult to induce these people to provide specimens, or even to await our arrival at their villages once our intentions become known, after the first few villages had been approached, rumours spread round to the remainder inimical to our success; suggestions that we were practising witch-craft on the specimens we were receiving were apparently accepted as being in conformity with local native superstitions.

Explanations to the Native Authority and to such members of the villages as awaited us were without effect; a large number of villages had to be visited to obtain the number of specimens required.

In order to obtain sufficient blood slides, the collection of faeces and urines was deferred until later, as we found there was less objection to supplying blood than these others, unfortunately when attempts were made to obtain urines and faeces to complete the survey, they were not forthcoming".

SURVEY NO. II. *Extract from the Medical Officer's report :—*

"The survey was conducted in Native Authority Mabuka's area, Mlanje. This Authority is the most progressive one in Mlanje district and it happens that his family from the point of view of heredity is the most important one in Mlanje. He is of the Nyanja tribe and even yet, upon tribal matters, he is recognised and consulted by chiefs in P.E.A. He has the advantage of having studied at the Jeanes' school, and in his youth had close contact with Europeans as a houseboy. His home, his wife, and family are scrupulously clean and in talking about health with him he volunteered the information that when he is travelling through his country he always carries boiled drinking water, this in an African of this country is the acme of prevention. He is sadly aware that progress is slow and told me that if his people grumble too much he slows up with his innovations and gives them time to forget before introducing another. His last order, which everywhere is being carried out, is that all bananas in the immediate vicinity of villages must be cut down as they breed mosquitoes and afford good cover for the lazy to relieve themselves in. He is well aware that he may be poisoned and has a lively apprehension of ending his days in this manner.

Last year and this year he held an agricultural show and gave prizes for the three best villages in his district. The native sanitary inspector of this station visited all his villages and reported on them fully and was in effect the judge.

Food supplies, etc. The food supplies of this district can be considered good. The rainfall is abundant and the drainage ample so that flooding does not occur. Maize, millet and cassava are eaten but maize is the favourite food. Beer is made from millet and cassava and drunk by all, including children. I mention this because as has been found in other parts of the world, the fermented liquor produces vitamins not otherwise present in the dietary. *Nandolo, nzama, musa* beans and *kobwe* peas are grown and also some groundnuts. The favourite beans are *nandolo* and *nzama*. Owing to the abundant rainfall green foods are available throughout a much longer period

of the year than in other districts of Mlanje or of the whole country. The planted green foods are however short for the last three months of the year except in villages with *dimba* gardens. The leaves of pumpkin, sweet potatoes, beans and cassava are all used for green *ndiwo* or relish. A cultivated green food new to me is *mpilu waukulu*. It is like a turnip as regards leaves but has no tuber. It appears to be a favourite food plant in this district with the better class African. It is commonly planted in *dimba* gardens. Three main *tengo* plants are gathered as green *ndiwo*—*chinomba*, *bonongwe* and *namaondo*. I have watched women gathering *chinomba* which is a very common weed and appears to grow plentifully on ground which has been used for crops and then cleared.

I met with an interesting method of preparing pumpkin leaves for storage, and use in the hot season. It appears applicable to any green leaf. The principle appears to be the complete sterilisation of bacteria on the leaves by boiling for fifteen minutes, then laying the leaves out in the sun until bone dry and then storing away. They keep for many months and are considered good eating when boiled up again, I was told that it is called *mfuso* by the Ngoni. It would appear that its vitamin content is likely to be low but it would be worth while having this point investigated. No special foods are given to pregnant women, although fickleness of the palate is common amongst African as well as European women at this time. They often ask for a fowl to be cooked! In this area there are no cattle. A few headmen keep goats. Practically no economic crops are grown in the area, but the ordinary food crops are economic as maize and beans are in demand by the tea estates all of which, with two small exceptions, are in Native Authority Mabuka's area. The people are therefore quite well-off and can either take work on the estates or grow food crops for sale. Lack of trees for building purposes is acute at the moment but village forest areas are coming on well. A large patch of *misitu* has been preserved intact at the Authority's own village, and the Authority has set a splendid example in afforestation by planting plenty of blue-gums. Sanitation appears on the surface to be progressing by leaps and bounds. The Authority has given orders that all huts must have a pit-latrine and refuse-pit, bathing and water-drawing places are distinguished in theory and in practice to a large extent, but there is one pernicious habit which the women will not give up and that is drawing water at the nearest water hole until it dries up. The high ascaris rate has been noted before in this district. From the tables of the Annual Report, 1935, it will be seen that ascaris infestation is a feature of Mlanje and Cholo and the further north one goes the more uncommon it becomes, until it is negligible in Karonga. To balance this infestation, *S. mansoni* is very light in the south riverine country while heavy in the lacustrine country of the north. Nutrition generally speaking was good. Of other pathological conditions pyorrhoea is the commonest, practically every man and woman above the age of forty has it unless they are of the educated type. In one case four lower incisor teeth were encased in a solid mass of tartar and the whole piece could be moved to and fro *en masse*. It would appear that the village native male and female as soon as the bodily powers begin to wane take no further interest in their appearance. A case of extreme splenomegally with gross enlargement was met with. The spleen was well beyond the umbilicus and actually met the descending liver edge which was a handsbreadth below the costal margin. One case of tuberculosis of the lungs and one case of tubercular spine were met with."

The particulars with regard to housing conditions in this Native Authority's village are shewn in the following table :—

Village	No. of huts	Average No. of rooms	Percentage with windows	Average No. of occupants	Percentage with kitchens	Percentage with latrines	Percentage containing chickens	
Malemias ...	115	1.4	15.5	3.3	15	100	77	.

An examination of all the huts in 10 other villages was also made and the following table has been compiled:—

Name of Village		Number of huts	Maximum capacity in cubic feet	Minimum capacity in cubic feet	Average capacity in cubic feet	Average number of rooms	Percentage with ventilation (shutters)	Average number of occupants	Percentage with kitchens	Percentage with latrines	Percentage with refuse pits	Remarks
Chinyama	...	37	4752	540	1750	1.43	48	3.27	14	50	54	A good village
Kabuthu	...	50	5440	480	1652	1.50	24	3.48	44	58	12	A good village
Majawa	...	48	6080	624	2150	1.91	66	3.23	46	68	4	Excellent. Best vil- lage in Mlanje accor- ding to native sani- tary inspector
Makwale	...	40	3600	840	1851	1.80	47	3.37	52	77	0	A good village
Namazoma	...	44	4960	400	1619	1.43	34	3.00	48	48	0	A good village
Sufume	...	40	6080	390	1409	1.45	27	2.80	37	62	0	Patchy. Some very good some poor houses
Sazola	...	44	2600	390	1424	1.61	34	3.11	29	66	2	Patchy. Fairly good
Nachwachwa	...	50	4320	568	1305	1.45	28	2.98	36	70	0	Poorish
Maponjela	...	25	2288	300	1042	1.24	24	3.24	24	60	0	Poor
Mabuka	...	42	2912	630	1233	1.41	50	3.52	52	81	31	Good
Total and average		420	6080	300	1543	1.53	38	3.20	38	64	10	

The Medical Officer states:—

“It will be evident from the above table that not enough cubic space is allowed per person, and that, added to the lack of ventilation, leaves much to be desired.

It must be remembered that a progressive area is under consideration and that the improvement in housing etc., has occurred in the last three years. There has developed a healthy rivalry between the younger headmen which is all to the good. As evidence that the improvement is recent, the high rate of ascaris should be noted, as ascaris infestation means definitely the eating or drinking of food grossly contaminated by faecal material, whereas hookworm infestation is dependent more on climatic and topographical considerations with, of course, insanitary methods of night soil disposal. I was surprised at the uniformity of the average number of occupants per hut and also that the number of occupants was so low. One gets the impression of extreme crowding, but no doubt this is due to the friendliness and neighbourly habits of the people, two huts closed and the third open with all children playing round and the women gossiping or pounding together at the gable end of one hut. In conclusion the evidence I found is overwhelming that higher education means clean wives, clean children, bigger and better-built houses with kitchens, latrines and ashpits”.

SURVEY NO. III. *Extract from the Medical Officer's report:—*

“This village was chosen as a type of village remote from the hospital. Another reason for its choice was that a year ago this village was rebuilt on model lines, and it was considered that it would be interesting to see if the improvements had yet made any difference to the health of the inhabitants, and also if the latter were proceeding on the sanitary lines advised.

The village is on sandy soil a few hundred yards away from the shore of Monkey Bay. Water is obtained direct from the Lake and therefore should be of good quality. The high percentage of schistosomiasis found is probably caused through bathing in the small streams and marshes which are adjacent. The latrines which were built at the instigation by the Medical Department a year ago were found to have fallen down owing to the villagers' neglect to repair them. They had

obviously not been used for a long time as the long grass immediately surrounding the village was heavily polluted with human excrement, thus accounting for the very large amount of hookworm found. As this village is for about eight months of the year unreachable by road, it is unfortunately impossible to exercise that constant supervision which at present seems necessary to keep any village on model sanitary lines.

With regard to the diet of the people the following information was obtained :—

- (a) Two meals are usually eaten each day, one in the morning and one in the evening.
- (b) The staple articles of diet are fish and maize, the latter usually in the form of *nsima*.
- (c) The common “ relish ” used is a kind of small bean.
- (d) A large amount of fish is consumed, but no meat of any kind.
- (e) There does not appear to be any seasonal changes in the dietary.

(f) There is no difference from the normal diet observed by pregnant women or nursing mothers.

(g) There were no obvious evidences of food deficiency diseases in children or in adults. Out of 120 children examined, no eye diseases or dental caries were observed. Out of 122 adults only 16 cases of dental caries or pyorrhoea were observed, and only 4 cases of eye disease. These figures compare very favourably with those found in villages remote from the Lake and are, in my opinion, due to the large amount of fresh fish in the dietary.

(h) The general state of nutrition is fairly good, and compares very favourably with the inland villages.

Housing. (a) There are 88 huts in the village. These are built in good straight lines and are mostly of a well-built type. Many have doors and windows of a primitive design.

(b) The average number of occupants per hut is 3.

(c) All the huts are of the one-roomed type. Most of the huts have a grass fence marking off their own compounds which are kept fairly clean.

(d) None of the huts have kitchens. Cooking is either performed on a fire made in the compound or else inside the hut.

(e) No domestic animals are kept except occasionally a chicken.

In addition to the actual survey a large stock of simple drugs and dressings was carried, and numerous cases of minor ailments were dealt with. The most common complaint was that of headache, which was probably due to chronic malaria and the anaemia following hookworm. The village headman and the elders were given long explanatory talks upon health matters generally. The headman requested that mass hookworm-treatment be carried out, but he was told that this would only be done when proper latrines had been made and the villagers were really using them, as otherwise their disease would quickly return to them.

The Actual Survey. Every man, woman and child in the village was fully examined, a total of 242 inhabitants.

No person refused examination, and no difficulty was experienced in obtaining the necessary specimens of stools and urines, this state of affairs speaks well for the increasing confidence shown towards Europeans by the inhabitants of the district, as it is directly against native custom here to allow anyone to gain possession of one's stool or urine as it is believed that if this is done, much harm can be caused to the person affected”.

(III) School Hygiene.

(a) Native Schools.

Owing to the incidence of illness being unusually high among the qualified medical staff of the Department, the programme of school medical inspections which had been contemplated for the year had to be reduced.

Three schools were, however, examined, *viz.*,

(i) *The Providence Girls' School, Mlanje.*

The findings for the year 1935 and 1936 are summarized in one table, table I. below :—

At the time of the survey all children who were found to be suffering from disease were treated.

Five cases with organic heart murmurs were found, all mitral systolic, two of the murmurs were extremely loud and one had a muscal sound superimposed on the murmur, none of these children had made any complaint and nothing had been noticed wrong with them, three had been in the school over a year and their weights had risen steadily.

Enlarged and infected tonsils were found to be very common, the relation between this condition and heart disease being well known. The findings appear to indicate that the rheumatic heart exists in this country and the medical officer making the examination suggests that with the increasing number of children attending school and with the consequent liability to spread of infection, cases of organic heart disease may become more common.

Puberty. It had already been suggested in the 1934 Annual Report, page 24, that menstruation usually occurs between the ages of fourteen and fifteen and, actually, it was found that sixteen of the girls had menstruated, out of a total of seventeen girls of the the age of fifteen and over.

Weights. On comparing the weights of the girls with those of boys (Table I. page 32 of Annual Report for 1935), it appears that up to the age of 12 years there is practically no difference between the weights of boys and girls. At thirteen, girls start to go ahead and at fifteen the girls are definitely much heavier. The numbers so far examined are few but it seems that a parallel exists with Europe in this respect.

On analysis, the above table gives the following percentages which are compared in the table II. below with the results obtained of an examination made at Karonga of 260 male children.

TABLE II.

			Providence Girls School, Mlanje	Karonga School
Number examined	...	...	304	260
Blood films positive of malaria parasites	...	...	37%	50%
<i>P. falciparum</i>	...	...	66%	34%
<i>P. vivax</i>	...	...	24%	3.8%
<i>P. malariae</i>	...	...	10%	62.3%
Stools:—				
Positive for hookworm	...	...	11%	25.3%
" " " <i>S. mansoni</i>	...	...	.6%	19%
Urines, <i>S. haematobium</i>	...	...	28%	55%
Spleen, enlarged	...	...	5.2%	40.7%

The results of the medical examinations (see Table III) conducted at Kota-Kota of 100 boys in 1935 and 111 girls in 1936, all living under identical conditions show a close similarity, the medical officer remarks that the only differences noted were that the girls were "better nourished, infinitely cleaner and generally better cared for" than the boys.

TABLE III.

Examination of 100 boys and 111 girls of ages between 2 and 10 years

			Boys, 1935.	Girls, 1936.
<i>Blood.</i> B.T.	...	...	4	1
M.T.	...	...	8	6
Quartan	...	...	6	9
Gametes	...	...	7	7
Multiple Infections	...	...	—	1
Undiff.	...	...	37	46
Negative	...	...	38	41
Endemic Index	...	...	62	64
Haemoglobin percentage	...	...	63.5	66.5
<i>Urines.</i> <i>S. haematobium</i>	...	...	86%	77.5%
Negative	...	...	14	25
<i>Faeces.</i> Ascaris	...	...	2	Nil
Ankylostome	...	...	58	51
Strongylus	...	...	—	2
<i>S. mansoni</i>	...	...	10	18
Hookworm and <i>S. mansoni</i>	...	...	2	8
Negative	...	...	28	32
<i>Spleen.</i> Spleens palpable	...	...	51	66
Splenic index	...	...	51	51
Dental caries	...	...	3	8

(iii) *The Catholic Institute, Marist Fathers, Blantyre.*

In table IV, the results of two consecutive years' examinations by two different medical officers are tabulated, there is considerable agreement.

In the urine examinations the medical officer in 1935 found *B. haematobium* positive in 7.5 per cent. but in 1936 the percentage positive was 46 per cent. the discrepancy was probably due to the different methods of examination, as in 1935 no centrifuge was used.

The weights are not included in the 1936 inspection but were found in 1935 to be on the average considerably below the European standard mentioned by McCaw, both medical officers comment on the diet which is the same as the ordinary diet in a native village and is lacking possibly in vitamins A and D and also in animal protein, the latter being considered chiefly responsible for the lack in growth (height and weight) as compared with European children.

TABLE IV.

Catholic Institute, Blantyre.

	1935	1936
Numbers examined	66	58
Average age	16.8 years	17.06
Nutrition: Good	74.2%	89.7%
Fair	21.2%	—
Poor	4.6	10.3%
Skin: Scabies	33%	Healthy 13.8
Tinea	1.5%	—
Impetigo	1.5%	—
Teeth	No caries	No caries
Tonsils—enlarged	4.5%	4.1%
Heart murmurs haemic	7.5%	5.1%
Spleen—enlarged	22.7%	24%
Abdomen, umbilical hernia	7.7%	Ventral hernia on exertion 57%
Haemoglobin	Not taken	70%
Blood—Malarial parasites	—	No parasites
Benign Tertian	4.5%	—
Quartan	4.5%	—
Sub-Tertian	3%	—
Urine— <i>Bilharzia haematobium</i>	7.5%	All ages 46%
		Age 10-14 years 33%
		Age 15-20 years 62%
		Age 21-22 years 37%
Faeces—Hookworm	Not examined	72%

(b) **European Schools.**

The three European schools are inspected every year by officers of the Medical Department.

The number of pupils attending in 1936 was as follows:—

(a) Limbe	41; 19 boys and 22 females.
(b) Blantyre	15; 13 girls and 2 boys.
(c) Zomba	11; 5 girls and 6 boys.

An improvement was noted in the dental condition of the children at the Blantyre and Limbe schools.

At Zomba it was found that 90 per cent. of all children had either enlarged or unhealthy tonsils, this result agrees very closely with the findings amongst native children in the same town and illustrates the heavy incidence of this condition in Zomba.

(IV) **Labour Conditions.**

(a) **Native Labour on European Estates.**

During the year medical officers visited a number of European estates, with a view to observing the conditions under which natives live and work on the estates, and to advise owners, where necessary as to the betterment of those conditions.

These visits were welcomed by estate owners, who as a rule were quite ready to adopt suggestions offered provided that no large expenditure of money was involved.

Section 15 of the Nyasaland "Employment of Natives" Ordinance requires employers to provide proper housing, proper food, proper medicine, and if possible medical attention, but does not attempt to define what is meant by the term "proper". This omission was possibly of set purpose, because, if any stringent and detailed regulations had been issued, only a small minority of employers could comply with them.

European estates in Nyasaland vary greatly in size, some are of several thousand acres, others two or three hundred only. The two principal agricultural products are tobacco and tea. The large freehold estates usually have a considerable number of native tenants living on the property, who may be called upon to pay rent either in money or labour, and they do in fact constitute a reserve labour supply. Speaking generally labour is of two kinds; (a) Permanent: these may or may not be tenants of the estate, and (b) Temporary: labour written on for the cultivation and harvesting of the crop. These natives often return to the same estate year after year.

The number of permanent labourers varies with the size of the estate, but is always relatively small, and consists either of the native tenantry, or of migrant labourers who have worked periodically for a number of years and have finally decided to settle. The temporary labourers may be either migrant, or immigrant. Until comparatively recent times estate-owners, a large majority of whom are situated in the Southern Province used to obtain additional labour from the northern districts of the country, but nowadays considerable numbers of immigrant Anguru from across the Portuguese border are employed. The reason for this, in part at least, is that the northern natives are attracted by the high wages obtainable in South Africa and in S. Rhodesia, and prefer to emigrate rather than to work for the relatively low wages obtainable in Nyasaland. There is also a tendency for estate-owners to prefer Anguru labour, not because it is essentially better than local labour, but because the Anguru being immigrants are out of touch with their home villages, and therefore have fewer distractions which may lead them to absent themselves from work.

Housing. As a very general rule the labourers live in collections of huts which are precisely similar to the ordinary native village. Most estates have what are called *zitandu*, that is, areas set apart for the accommodation of temporary labour. A native on engagement is given 2 or 3 days on full pay in which to erect a temporary hut in this area and he occupies it during the term of his employment: at the termination the hut is usually burnt down. On some of the larger estates permanent labour lines have been erected, the huts being usually of wattle and daub, but sometimes of brick. Specially skilled and the more highly paid labourers, usually possess special huts which are often built of brick.

Sanitary arrangements.—These usually are either entirely lacking or extremely primitive. Comparatively seldom are any measures taken to provide a good water-supply, or proper latrines, or to arrange for the disposal of refuse.

Food.—Posho is given either in money or in kind: the money payment varies from 6d. to 9d. per week, and the foodstuffs consist usually of maize or maize flour, beans and salt. Seldom, if ever, is meat or fish issued as a ration, and the money payments hardly suffice for the regular purchase of either of these, even when available. There is little doubt that the nutritive value of the ration is inadequate, though it has a relatively high caloric value. The lack of first class protein and of fat is particularly noticeable.

Medical attention and medicines.—Every estate owner employing labour who desires to do so, can be registered with the medical department, and by that means obtain drugs and dressings at cost price. This is a concession greatly valued by planters, and used extensively. Some of the larger estates have a small hospital-cum-dispensary and employ a permanent native hospital assistant or dispenser. On the smaller plantations the planter keeps a stock of drugs, and himself treats the simple ailments of his employees. In places where there is an estate dispensary and a permanent dispenser many natives not employed on the estate apply for and receive treatment. Nyasaland natives have an absolutely free choice as to how and where they shall dispose of their labour, but the two factors which appear to play the chief part in determining their choice are, the temperament of their employers, and the amount of food which is supplied to them. On some of the larger estates much could be done to provide improved housing accommodation, and adequate sanitary arrangements, indeed a few of them are starting to erect well laid-out labour lines on specially selected sites, and to improve generally the hygienic conditions under which their native labour lives and works. On the other hand the planter who is managing merely to keep his head above water, cannot reasonably be expected to undertake expenditure which would tip the financial balance against him. With regard to medical arrangements it is difficult to envisage any scheme which would be both satisfactory and workable so far as individual employers are concerned. It is to be noted that there are large areas of land entirely in private hands, and in these areas there are no Government dispensaries: the natives therefore have to rely for medical attention on estate owners, or else travel considerable distances to a Government dispensary: in such areas some form of co-operation in medical effort amongst the planters should be possible. On the other hand the small and isolated planter cannot as a rule afford to maintain anything in the shape of a medical staff, and in his case the practice of supplying drugs to him at cost price offers the best hope that employed natives will receive medical attention.

The above remarks may be taken as applying to labour conditions in general throughout the country, it may be interesting, however, to quote extracts from a medical officer's report upon a series of estates employing numbers of labourers varying from 4,000—5,000.

The medical officer in making his inspection has followed three main lines :—

- (a) Housing and sanitation.
- (b) Feeding
- (c) Medical attention.

He points out that from a health point of view well-constructed labour lines should have :—

- (a) well-spaced and well-built houses arranged in small, scattered compounds, in order to avoid spread of epidemic diseases.
- (b) Latrine accommodation, in order that the incidence of such endemic diseases, as hookworm may be lessened.
- (c) Good water supplies and good bathing places, to prevent the spread of water-borne diseases, *e.g.* typhoid, bilharzia, dysentery, etc.

Houses have been differentiated into four kinds :—

- Type I. Good village house, waterproof and dry, with two good rooms and a verandah.
- Type II. The good 'compound' house, the village house arranged in compounds.
- Type III. The 'bad' house, comprising the following features, roof leaks, non-weatherproof walls, insufficient room space, no verandah.
- Type IV. The 'miserable temporary erection' usually of grass.

The latter type unfortunately houses a large proportion of the immigrant labour.

With regard to feeding, the diet given to labour is on the whole similar to that which they are accustomed to in their own villages, but probably lacks *ndiwo* or relishes and green foodstuffs. There is a high proportion of carbohydrates to proteins, the variety of the protein is limited, For the most part labourers are given the alternative of 6d. 'posho' a week or food. Generally speaking the 'resident natives and the higher paid labourers prefer the money, with others the choice depends on the price of food and its scarcity or otherwise. However it is difficult for a labourer to feed himself and his family on 6s. a month plus 2s. posho, and to provide an 'adequate' diet.

Dealing now with individual estates the following conditions were noted and for ease of comparison are arranged in the form of a table :—

TABLE I.

	No. of employees	Medical	HOUSING				Latrines	Water supplies	FEEDING. (Pluckers on nearly all estates get a meal of maize flour and beans in addition to their rations).
			Type I.	Type II.	Type III.	Type IV.			
Estate No. I. and No. II.	1,100	Small hospital, and outpatient department. One native hospital assistant, sanitary squad, one dispenser	6%	24%	37%	33%	Good latrines round the market, well used. Attempts made to provide latrines at other compounds but not much used	Safe	Good: 1d. a day or maize meal 2 lbs. per day and beans or groundnuts 5 oz. per day. Sugar and salt issued each week. Meat occasionally.
Estate III.	2,500 to 3,500	Hospital and dispensary, 16 beds. Senior hospital assistant, 2 dispensers for the 3 rd quarter of 1936. 30,080 patients were treated. Hospital used on payment by neighbouring estates. This estate has a permanent anti-malarial scheme in progress.	17%	25%	38%	20%	A native sanitary inspector is employed, latrines are built and in use in the compounds. In the villages there are a few latrines, refuse is dealt with by an incinerator at the compound.	From springs and shallow wells. Could be improved. Bathing in the river—safe.	6d. a week or food in lieu, adequate.
Estate IV.	900 approx.	A two roomed dispensary native dispenser in charge, serious cases sent to the Government hospital.	10%	30%	50%	10%	No latrines are provided except for a few of the headmen.	All water supplies subject to contamination. 8 shallow wells and one river fairly good.	Information insufficient.
Estate V.	500	Small dispensary with two rooms, one dispenser. Adequate.	1.5%	10%	35%	50%	Practically no latrines are provided. Environs of factory highly faecal.	A few small wells and Ruoi river. Fairly good.	6d. posho or 21 lbs. of maize flour and $\frac{1}{4}$ lb. beans weekly.

The medical officer summarises his report as follows :—

“*Medical.*—The scope of the medical attention was roughly in proportion to the size of the estate with one exception and in this case, serious cases were sent to the government hospital. The standard of knowledge of the African assistants was fair and sufficient to cope with the range of cases presented.

Housing.—Housing is required for two types of labour, resident or tenant labour (these pay rent and hut tax) and temporary labour, either local or immigrant (Portuguese East Africa). There are on nearly every estate a collection of compounds which come within the lowest type of classification, *i.e.* collections of hovels, with small capacity, cracked walls and sparse thatch, huddled together in a general atmosphere of filth, flies, faeces and foetor.” The medical officer remarks incidentally that Government officials are handicapped in criticising such conditions as housing at the Government ‘boma’ is often in a similar state. He considers that conditions could be greatly improved by the intelligent interest of the European together with personal inspection and the provision of a native sanitary staff armed with the necessary powers to carry out improvements. ‘Tenant’ labour as has already been stated is fairly well-housed, permanent labour is often well-housed but usually the houses remain in the *zitandu* or compounds. The medical officer suggests that compounds should be small, laid out in orderly lines and well spaced, sites for new arrivals should be definitely marked out and houses built to a plan, drainage requires attention and adequate building materials, *i.e.* grass and poles should be provided for new comers.

Some estates have tackled the problem and have schemes of semi-permanent housing with definite programmes of work.

Latrines.—From a purely economical point of view, the establishment of latrines is justified, in a community where the incidence of hookworm is high, a hookworm campaign is almost certain to improve the output of the labour to a considerable extent.

Finally, the medical officer remarks that the industry followed by the estates under review is, so far as Nyasaland is concerned, an old one and as yet little has been done to benefit employees. The maxim that healthy conditions mean an efficient labour force is not yet fully appreciated. The European himself has suffered in this district from ill-health yet it has not been realised that the more healthy the conditions under which the labour live, the more healthy will the employer be.

(b) **Emigrant Labour.** During the year 1,579 natives were medically examined for work either with mines in South Africa or for work in Southern Rhodesia. The number of other emigrants making their own way to South Africa, the Rhodesias, Tanganyika or Portuguese territory is not known, but the Report on Emigrant Labour, 1935, estimated that in that year the total number of Nyasaland natives abroad was in the neighbourhood of 120,000.

(c) **Immigrant Labour**, consists of (i) an unknown number of Anguru from Portuguese territory who seek work every year chiefly on the tea plantations at Cholo and Mlanje, and (ii) deported Nyasaland labour from South Africa. During the year 1,472 deported natives from South Africa, adults usually young or middle-aged, were medically examined on arrival in this territory. The following table shows the results of the medical examination :—

TABLE I.

Results of the examination of deported labour from South Africa on arrival in Nyasaland.

Hospital						Out-patient Department													
Number examined	Influenza	Chickenpox	Spastic paraplegia	Broncho pneumonia	Lobar pneumonia	Leprosy	Pulmonary tuberculosis	Syphilis primary	Gonorrhoea	Arthritis	Paralysis	Blindness	Thrombosis	Elephantiasis	Ulcer	Myalgia	Amputations	Oedema	
1472	2	1	1	1*	1	3	5	7	1†	1	1	1	1	1	1	1	2	2	

(iii) Re-patriated labour from South Rhodesia.

These repatriates consist almost entirely of chronic invalids unable to earn a living, and are usually returned to this country as soon as their disease has been arrested and after the active or infectious symptoms have been medically or surgically treated. As a rule they arrive by motor-lorry and each batch is accompanied by a dresser from the Medical Department in

*Died.

† Cases of venereal disease were instructed to report to the nearest medical station, letters to this effect were sent in the vernacular to the native authorities concerned.

Southern Rhodesia. They are medically examined before they leave Southern Rhodesia and are again medically examined on arrival when any cases requiring further hospital treatment are suitably dealt with. They may, before proceeding to their homes, have to stay a night or two in Blantyre, if so, they are accommodated in a permanently-built rest-house and are provided with *posho*. *En route* they are provided with food by the transport carrier under contract. They suffer little hardship during the journey provided that the road is in fairly good condition, if however, the rivers have risen, as frequently happens during the rainy season, delays of perhaps days may be experienced, invalids under such conditions may suffer grave disabilities.

Their general condition is deplorable, *vide* table II. which shows the causes of disablement and the numbers dealt with; as the majority are scarcely able to look after themselves, the continued repatriation of these 'human wrecks' constitutes a problem which must be tackled. In a civilised country the majority of these cases would be admitted to infirmaries or homes for incurables. The following table shows the main causes for repatriation for the years 1932—1936:

TABLE II.

Repatriates from Southern Rhodesia, 1932—1936. 611 persons.

Disease.				Number.	Percentage.
Fractures, burns and injuries	...	...	...	115	18.8%
Tuberculosis	...	...	...	64	10.4%
Insanity, mental deficiency, epilepsy	...	...	...	75	12.2%
Blindness	...	...	...	24	3.9%
Venereal disease	...	...	...	14	2.2%
Disease of circulatory system	...	...	...	20	3.2%
Hemiplegia	...	...	...	6	.9%
Filariasis	...	...	...	6	.9%
Scurvy	...	...	...	8	1.3%
Leprosy	...	...	...	20	3.2%
Miscellaneous	...	...	...	259	—
Total				611	

As has already been noted above, the Committee who reported on Emigrant Labour estimated that 120,000 able-bodied males were out of the country; during a medical survey in the Chinteché district, the medical officer endeavoured to analyse the main reasons for emigration, he came to the conclusion that the principal reason is in order to obtain money to pay off debts contracted in buying a wife, secondly to obtain money to purchase clothes of which these people are inordinately fond and thirdly to satisfy the desire to travel, no native actually gave of his own accord as a reason for emigration the need to collect money for hut tax.

357 women were asked where their husbands were, 40 per cent. stated that they were abroad.

Labour Reeruiting. At Dedza 1,040 were examined by Government medical officers, 754 were passed fit and 286 rejected, quite a number of rejects were passed as unfit owing to curable complaints, *e.g.* bilharzia, ulcers, scabies, etc., on the whole the physical standard of the men was very good.

As they were all for work on the mines, a very strict examination was made.

(V) Housing and Town Planning.

A committee styled the Central Town-Planning Committee deals primarily with town-planning matters in the Protectorate. For the larger townships of Zomba, Blantyre and Limbe some progress has been made in the establishment of model villages for the accommodation of natives employed in the townships.

In Zomba the houses are built for the most part of sun-dried brick with grass thatch, each house has its own kitchen and latrine. A commencement has been made in erecting houses constructed of permanent materials and it is anticipated that a few will be built every year to replace the temporary structures. Three houses were successfully constructed of *pise-de-terre*.

At Blantyre a small block of model housing has been erected, and a well-built location of some 31 houses has been completed. A rest-house constructed of brick and cement with the necessary latrine accommodation has been provided for native travellers passing through Blantyre on their way to or from South Africa or Rhodesia. The approved programme includes the erection of further buildings with sleeping accommodation and a medical inspection-room mainly for the use of repatriated labour. The Witwatersrand Native Labour Association has provided a well-constructed rest-house for the convenience of its labour when breaking their journey to South Africa. The Railway have also been active in improving the condition of their labour lines, semi-detached houses consisting of a living-room and kitchen are in course of erection.

Limbe. Progress in the native location continues, but insanitary conditions prevail at the Indian stores which still harbour a number of natives. The native-housing at the Imperial Tobacco Company's estate just outside Limbe is also to be improved by a scheme which will be shortly commenced and which will include the provision of brick and cement houses, a bore-hole, pit latrines, and bath-rooms with shower-baths.

Jeanes Centre near Zomba. For the new community workers and their wives, well-built *pise-de-terre* houses have been constructed with fire-places, separate rooms, and with kitchens and latrines, as these houses are nicely spaced out and are visible from the main road they serve as examples of what may be constructed at little expense by the natives in their own villages.

(VI) Food in Relation to Health and Disease.

Interest in the subject of nutrition was stimulated by a despatch from the Secretary of State dated the 18th April, 1936.

The newly-formed Native Welfare Committee, in a memorandum on this matter submitted to Government, stressed the importance of investigating the problem of nutrition from all its aspects and of obtaining information as to the adequacy or otherwise of native diets and native methods of agriculture and as a preliminary measure drew up a questionnaire dealing with foodstuffs and food habits, the nature and extent of available crops, the customs and *tabus* with regard to food, etc., etc., for circulation to all district commissioners, agricultural and forestry officers, officers of the Education Department, veterinary and medical officers, missions and certain selected Africans.

The results of this enquiry should pave the way for the special investigations on anthropological, medical and analytical lines which should follow on.

While study into the problems of nutrition is in its infancy in this Protectorate some interesting facts relating to diet have been obtained by medical officers while making medical surveys.

In the Chinteché district it was found that cassava (five kinds were grown) was the principal crop as it was easy to grow and although it was realised by the natives that maize was a better food-crop yet it was not grown to any extent as famine is rare, the monkeys steal it, the women find it harder to grind, it is said to make the land hungry and means a lot of work clearing, etc. Fish is eaten when available and is fairly plentiful during the good fishing months August to October or later. *Kungu*, which is the cake made from squashed 'lake flies' is an important relish, it is usually roasted. Meat—as only red or white meat is available the consumption is scanty. Monkeys are eaten, game-birds, duck and guinea-fowl occasionally. Millet is grown for beer, the beer being made from cassava gruel. Sweet potatoes are common articles of diet and small quantities of tomatoes, onions and English potatoes may be consumed. Salt is obtained by burning swamp and marsh plants. Greens—cassava and pumpkin leaves, and the leaves of beans and sweet potatoes and the leaves of certain weeds are eaten. Edible fungi and mushrooms also play a part in the dietary.

In the Kota-Kota district a detailed account has been given by the medical officer of the local dietary, this is produced as an appendix to this report. In this district conditions are much the same as in Chinteché and so the essential features of the diet are very similar. The staple food being cassava, rice is eaten to some extent, fresh fruits, vegetables, fish, meat very occasionally, and green leaves supplement the diet. The medical officer stresses the importance of obtaining information with regard to diets from the women and not from the men, as the women-folk have complete control of all matters connected with food and it is neither customary nor polite for the husband to ask his wife questions about his meals.

(B) MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

The measures taken to spread the knowledge of hygiene and sanitation may perhaps best be illustrated by extracting some of the information furnished in the annual reports by the various medical officers and sub-assistant surgeons in charge of districts.

(a) *Fort Manning district.*—Mention has already been made in another part of this report of the village re-construction work which has been carried out with considerable success in the Fort Manning district.

When a village is to be moved, the matter is first reported to the District Commissioner who, if he approves, notifies the fact to this Department; arrangements are then made for a layout to be prepared showing the position of houses, kitchens, food-stores, animal-shelters, etc. Existing water-supplies are examined and improved if possible, sites for bathing, washing clothes and for drinking-supplies are demarcated. In this district 35 villages have been partially or completely re-constructed and sanitated. One of the advantages of this procedure is that campaigns for such endemic diseases as hookworm are not carried out until the new villages have completed their sanitary arrangements, this fact is appreciated by the natives and usually efforts are made to bring villages up to the sanitary standards required.

Dedza.—A baby show was held at Native Authority Gomani's towards the end of the year. A demonstration (with models of latrines, refuse-pits, etc.), was staged, together with a baby's cot, complete with mosquito-net, a home-made meat-safe and various locally-made types of cooking-utensils.

In the district the usual lectures on anti-malarial measures were given to the villagers on the occasion of visits by the medical officers to rural dispensaries.

Kota-Kota.—Efforts of the travelling vaccinators and sanitary inspectors have resulted in the completion of a series of 470 latrines in one part of the district and of 40 in another.

Housing on the Lake shore is improving generally and there is now a greater percentage of houses provided with windows. Windows are much appreciated by the natives, but are difficult to arrange for and expensive as special workmen have to be employed.

Lilongwe.—In a great many parts of this district, the only source of water-supply is from holes dug by the natives alongside swamps. An endeavour has been made to improve these by choosing the sites for water-holes at some 12-15 feet above the dry season level of any stagnant pools, and on the rising banks of the swamp, a fence is made round the well some 10 feet from its mouth and finally a method of drawing water to avoid pollution has been devised consisting of a pole fitted with a counter-poise device balanced on a forked stake, a bucket with a rope attached hangs from the end of the long arm of the pole and the device can be erected with native materials in two days and worked by a child, the water is delivered some 3 or 4 feet from the well mouth. *A clean milk campaign.*—A comparatively well-to-do native was persuaded by the veterinary officer to sink his capital in constructing and equipping a brick-built, cement-floored cow-house and in providing himself with approved milking-buckets and delivery-churns, his assistants sell the milk in clean white smocks and he reaps the reward of his endeavours by obtaining a halfpenny a gallon more than the other natives for his milk.

Mlanje.—A district of some 130,000 native inhabitants, the medical officer remarks that latrinization of the district is proceeding steadily, out of six sections, two are fairly well latrinized, an attempt has been made in one, but, in the other three practically nothing has been done. The extent of the sanitary measures undertaken in rural areas depends on the education, ability and drive of the native authority. The medical officer as in all other districts visits 'on tour' as many villages as possible, giving lectures in hygiene and sanitation; the rural dispensers devote their afternoons to the improvement of conditions in the neighbourhood of their dispensaries.

At the native authorities' show this year, a model house was constructed under the auspices of the medical department, showing a latrine-pit, kitchen, etc.

The rural dispensers are given monthly lectures on the diseases they treat during their work and are also taken round the hospital and shown the advanced stages of the diseases which they treat in mild form in the district.

Fort Johnston.—The medical officer mentions that the rural dispensaries are the centres from which improvement should radiate, each dispensary is provided with a latrine and the villagers in the neighbourhood of dispensaries have benefited by the instruction in hygiene which is given to them, as one village has built and used during the year 40 latrines.

The headmen and chiefs in the district are encouraged to visit the hospital and to see for themselves how the patients are cared for.

Karonga.—The medical officer reports that around Karonga it is now the usual thing to find every hut with its own latrine, one native authority has three sanitary policemen who proceed from village to village in his district seeing that his orders with regard to sanitation are carried out.

As a measure of prevention of infection with bilharzia the medical officer has built a causeway extending from the dry ground inland through the swamps to the sandy beaches of the Lake shore where there are no snails, natives are encouraged to use this causeway and to construct similar causeways from their own villages to the Lake shore.

The orders issued by the native authority regulate the growing of any except low-growing crops within 20 yards of a house, the disposal of refuse and the demarcation of bathing and drinking places.

An interesting experiment is being made in the villages within 5 miles radius of Karonga, a hut to hut census has been taken and the number of inhabitants has been found to be 4,589. All have been vaccinated, latrines are being provided for every hut and hookworm treatment is now being given, 22 lepers were found in this area and an endeavour has been made to segregate them, 4 cases of pulmonary tuberculosis were seen, these are being treated and cases in contact are being placed under observation. A register of births and deaths is being kept. Lectures in hygiene are given by the medical officer and the dispensers and vaccinators working in this area. Mothers have instructions to bring all newly-born infants as soon as possible to the hospital to receive advice and to check up with the figures for births and deaths. Next year all those suffering from bilharzia will be treated.

(b) General measures for rural improvement.

A direct lead has been given by the Native Welfare Committee who in a memorandum dealing principally with co-operation between the administration, native authorities and technical officers, stressed the importance of the provision of the means of health to the native population,

they suggested that the physical welfare of the native depended not only on the efforts of the health service but also on the combined efforts of all departments concerned with native welfare. They recommended that an actual demonstration, on a small scale, of co-operation and co-ordination of effort of all technical departments working in rural areas would be of great practical value and would afford data of considerable importance for any future schemes of development, they suggested that an experiment might be made in districts where agricultural development is taking place and where native authorities are educated and progressive. Such an experiment would, in their opinion have great value as a means of propaganda in spreading the knowledge of hygiene and sanitation.

(c) *Inspection of Estates.*—In every district, the importance of improvement in labour conditions generally has been emphasized departmentally and as a routine measure and with the approval of employers, estates in every district have been visited by medical officers and advice on matters of general health and sanitation have been given, these visits have on the whole, been welcomed by the employers who endeavoured to carry out the improvements suggested so far as their financial circumstances will permit.

(d) *Propaganda.* As was mentioned in last year's annual report a series of articles on the preservation of health written by members of this Department have appeared in the vernacular in the government-assisted newspaper, *Zoona*. For the better control of venereal diseases departmental pamphlets have been drawn up and have been distributed to all government and mission hospitals and dispensaries and have been displayed in government offices and in other public places. Native authorities and principal headmen have been provided with copies and have been instructed to read them at regular intervals at meetings of district native councils. The Education Department has made a special effort to explain to teachers and to pupils under training at the Jeanes' centre the dangers of infection with venereal diseases. Posters have been obtained by the courtesy of the British Social Hygiene Council. All repatriates are medically examined.

(e) *Agricultural Show.* A successful demonstration was made by the Medical Department at the annual agricultural show, the attendances were again exceeded last year. During the next year special efforts will be made to attract women and children to visit the child-welfare exhibit.

A display of the foodstuffs constituting the weekly dietary in force at the African Hospital, Zomba, evoked considerable interest both among Europeans and Africans. Models consisting of the following were displayed; (i) village water supplies; (ii) a European compound with servants' quarters; (iii) a clean and dirty native compound; (iv) a layout of a model village; (v) types of native housing. Slides illustrating the different stages of the malaria parasite and demonstrating other protozoa were arranged under microscopes, while diagrams illustrating the types of parasites were displayed on the adjacent wall. Mounted specimens of ticks, flies and mosquitoes were also shown.

(C) TRAINING OF AFRICAN PERSONNEL OF THE MEDICAL DEPARTMENT.

Progress has been made in training African men and women to take their part in the health programme of the country.

The African Hospital, Zomba, lately increased in size by opening the new buildings which accommodate some 100 beds, now functions as a teaching school. By departmental re-organization two medical officers and two European nursing sisters are now posted to this institution. One of these sisters is trained in child-welfare and maternity work and the other is a trained sister-tutor. An infant-welfare and maternity clinic has been established, there is a well-equipped operating-theatre and the surgical practice is undertaken by a medical officer with specialist qualifications. A modern and efficient x-ray apparatus has been installed and a venereal clinic has been opened and is well attended.

The pathological laboratory is adjacent and is in charge of the Government Pathologist who also undertakes the training of native laboratory-assistants. The training of native female nurses and male dispensers or dressers is now being undertaken departmentally. A curriculum has been drawn up and as one of the nursing sisters is a trained sister-tutor regular instruction is now given. Three objects are kept in view :—

- (i) to produce capable male nurses trained for ward work, theatre work and simple dispensing;
- (ii) to produce dresser-dispensers with some knowledge of diagnostics and therapeutics which will enable them to treat the ordinary and minor complaints met with at the rural dispensaries; and
- (iii) to produce men with a knowledge of hygiene and sanitation applicable to village life, so that they may play their part as advisers to native authorities.

To obtain these objects only candidates who have passed standard V or VI, are admitted. The length of the course will occupy fifteen months with a possible extension according to the capabilities of the pupils. The course is divided into three parts, roughly corresponding with the three objects in view. but all the time the probationers are under training, they are actually working in the wards, in the theatres, in the out-patients' department, dispensary and so forth. For the first 6 months, their training includes instruction in :—

- (a) ward work, demonstrations and lectures by the sister-tutor.
- (b) Anatomy and physiology. The anatomy is very elementary and comprises the names and positions in the body of the large bones, and the contents of the thorax and abdomen and the situation of the main arteries.

Physiology includes lectures on the systems of respiration, circulation, digestion, absorption and excretion.

During the second six months, ward work is combined and lectures are given by the medical officer on simple clinical methods, signs, symptoms and treatment of diseases listed in Appendix A. of the dispensary handbook, and the signs and symptoms only of the diseases listed in Appendix B. During the last three months practical demonstrations on village hygiene and sanitation, practical instruction in infection therapy, vaccination and specialist instruction in theatre work, dispensing, etc., are given. At the same time dispensers already in the service are sent in for "refresher" courses and lectures are given by medical officers in the routine work in the hospital and in any special subjects if required. In the female wards 9 native women are employed and it is hoped to augment this number during 1937, the sister-in-charge teaches these women nurses' duties and as opportunity occurs the aseptic management of labour cases. Unfortunately native custom decrees that no unmarried woman can attend another during a confinement, so that, progress in this direction is somewhat slow. During the year some training of native sanitary inspectors was attempted and two candidates passed the standard required for the lowest grade. Two sanitary inspectors were brought to Zomba for refresher courses. Six vaccinators were brought to Zomba for training in rural sanitation work and at the end of the year, two considered to be sufficiently advanced to return to their districts. They will, it is anticipated, be posted for rural sanitation work, to local native authorities.

Training of the higher grade of hospital assistant is undertaken by the Blantyre Mission where training of native midwives is also carried out, for the latter an ordinance has now been enacted by which official recognition in the shape of a certificate is afforded to those women who have undergone a specified training and passed a standard examination.

Lastly it is satisfactory to record that the proposals for the further development of rural areas foreshadowed in para. IV. of section D, page 30 of the annual medical report for 1934 are in a fair way of being accomplished. In November a number of welfare or community workers were admitted for a 2-year course of instruction at the Jeanes' Centre and the curriculum prepared to a large extent by the Native Welfare Committee follows closely on the lines suggested by the Health Department. Such a scheme, when it arrives at maturity and provided it has the full co-operation of all departments concerned with native welfare, should have a great influence on the improvement of rural conditions and should provide a stimulus for a higher and healthier standard of living and a consequent increase of prosperity.

(D) RECOMMENDATIONS.

It is assumed that a standard of expenditure on health services has been adopted for all territories under the Colonial Office administration, it is not known upon what basis or by what method this standard has been arrived at. Conditions vary very greatly in different territories and the expenditure in different countries although on a similar ratio may have vastly different results. The standard of education, the general condition of the rural population, means of communication, transport facilities, etc., etc., all have a considerable influence on any programme undertaken for the general improvement of health conditions. In the annual report, page 7, for the year 1935, it was suggested that the medical expenditure per head of native population in this territory compared somewhat unfavourably with the corresponding expenditure in other adjacent territories.

Now the proceeds of direct native taxation according to official records for 1935 were £128,224. The total expenditure for this period on native services is stated to be £114,961 the latter figure including an amount of £5,283 from the Colonial Development Fund and £2,466 from the East African Loan. It may, perhaps, be argued that the natives should get back in native services at least as much as they find in direct taxation.

On reading the annual reports of the medical departments of the neighbouring East African territories, the uniformity displayed by the directors, who voice with one accord the need for more adequate training of their native staff, is very striking. It is of course perfectly true to say that without increase of funds and increase of staff, no great progress in health matters can take place, at the same time how is it possible for a medical service to stand still? In Nyasaland, even in the last five years, the in-patient totals have risen from 6,325 in 1932 to 9,757 in 1936, and the out-patient totals from 308,862 in 1932 to 435,476 in 1936. Also, as one of my colleagues has remarked, the standard of medical work has improved and African hospitals are now admitting with success, cases which require considerable skilled care and expert attention. The question then that every health service has to answer is how can the greatest amount of good be done with the least expenditure?

Although most of the East African colonies are perhaps more prosperous than they were a few years ago, yet there is no sign of any boom or any likelihood of any considerable increase of funds for health purposes being made available, expenditure on such services must, therefore, be directed, in the main, to the consolidation and improvement of the essential services already maintained. European qualified staff are expensive and little increase can be envisaged in the near future, it is essential therefore to take all possible steps to train and improve the standard of the work of the African personnel. What is urgently required in Nyasaland is a larger number of better educated and more adequately trained native assistants capable not only of diagnosing and treating minor ailments and able to distinguish between cases which are suitable for treatment as out-patients and those who require hospital treatment, but who are also fitted to initiate and carry out measures of prevention and propaganda against the more prevalent of the endemic diseases. The importance of secondary education, by which means, a supply of candidates,

who have been sufficiently well-schooled to be taught the elements of medicine, hygiene and sanitation, may be made available for training, cannot be too strongly emphasized. In this territory during the last few years an endeavour has been made to raise the standard, in every sense, of the African personnel of the health service; the training of male dressers and female nurses has been placed on a definite basis, the African Hospital, Zomba, which now accommodates some 140 in-patients has been re-organized and is being used as a teaching school.

African assistants of a higher grade are trained at the Mission Hospital, Blantyre, and provision has been made for a grant-in-aid for this school in order that the work may be continued and maintained at a high level of efficiency.

To consolidate this framework, it is necessary that the European staff of the Department should be augmented in order to ensure that not only is the full staff at the Zomba hospital permanently maintained irrespective of leave movements, casualties, etc., but also that the staff so engaged may be employed to the full extent of their capabilities and not utilized for duties which could be more economically and efficiently performed by subordinate and less expensive staff. Without entering into detail, one additional nursing or health sister, one European quartermaster and one additional sanitary superintendent are considered to be the minimum requirements to place the scheme of training upon an economical, satisfactory and efficient basis.

The above remarks may be considered to apply more particularly to the training of native assistants of both sexes for hospital work and for rural work in hygiene and sanitation. In the general development of the Protectorate, however, it is equally important to raise by every available means the physical, intellectual and cultural standard of the native population and to ensure that every possible care is taken of the newly-born child and of the mother before and after confinement, and recently the Colonial Advisory Medical Committee passed the following resolution:—

“The Committee thinks that the desirability of increasing the number of local women as nurses, midwives, health-visitors and doctors should be carefully considered in each dependency.”

The native female population of this territory according to the last census, 1931, (including adults and children) was estimated at 847,671. The native staff at Government native hospitals are nearly all males, there are at present only 28 native women employed in the hospital wards as compared with some 200 males. For only one of the fifteen native hospitals, has it been found possible to provide European nursing-sisters. No women medical-officers are employed by Government.

It will be appreciated therefore that under such conditions it is no easy matter either to attend to or to nurse women and children when they do venture to seek in-patient treatment. At the African Hospital, Zomba, and at the Jeanes' Centre only has it been found possible for Government to undertake any child-welfare and maternity work.

Within the last few years, monies have been obtained from the Colonial Development Fund and three welfare clinics and three houses for health sisters have been erected in three districts in this territory, but financial circumstances have made it impossible either to utilize these buildings for the purpose for which they were intended or to provide any European health sisters or to develop the welfare side of the health department's activities. The present provision of native midwives, native nurses, European nurses, health visitors is considered to be entirely inadequate and it is recommended that if financial resources are available, the establishment of European nurses be increased by the engagement of at least three health-sisters.

For the training of native midwives, a qualified female medical-practitioner is necessary. At a recent meeting of the Native Welfare Committee it was unanimously held that more attention should be paid to the training of native women in midwifery and hygiene and that every opportunity should be taken to expand and to extend the work already being undertaken in this connection. It is suggested that the most economical and most effective method of tackling the problem is to extend the work now being performed at the Jeanes' Centre rather than to develop the activities at the African Hospital, Zomba. The Jeanes' Centre is already devoted to general welfare work and should have, by reason of its development, an increasingly important influence in raising the standard of rural conditions throughout the country.

Already chiefs and headmen attend the Centre and receive instruction in general community work; welfare or community workers are now being trained and one envisages that in a few years every district and even every village or group of villages will have its chief or headman, its Jeanes' teacher and its welfare-worker, all trained at the same institution, imbued with similar ideas and all working to one common end. These disciples of the Jeanes' school, be they chiefs, or teachers or welfare-workers are all accompanied during their course of training by their wives and families; the wives are given a course of training in the care and feeding of their children, in simple domestic economy and in the elements of mothercraft and maternity work. There are already at this centre two fully-qualified nursing-sisters who have been specially chosen for this type of work and it is suggested that the scope of the work at the Jeanes' Centre should be enlarged and made more valuable by the appointment of a lady medical officer to this centre. It would appear that the Jeanes' school by its rapid development has almost outgrown its original function as a departmental institution, its activities now embrace every aspect of rural welfare and it is suggested that it might with advantage be made extra-departmental and might be managed by the present Native Welfare Committee and it is with this proviso in view that the proposal referred to above is made. The posting of a lady medical officer at the Jeanes' school would allow of the establishment of a complete child-welfare and maternity unit which would serve primarily the Jeanes' school, the wives and children of Jeanes' teachers, welfare-workers, chiefs and headmen, and secondarily, the

district in the immediate vicinity of the Centre which is thickly-populated and is most suitable for such an experiment and where welfare experiments in other directions are being conducted. An important native authority is resident in the neighbourhood and he and his people have already shown themselves receptive to ideas of social welfare.

One of the chief objectives of the clinic would be the training of native midwives for work in rural districts, where supervision would be available, and where the native authorities having themselves passed through the Jeanes' school would be well-acquainted with and would lend support to this branch of welfare-work.

Very little capital expenditure would be necessary beyond the provision of a house at the Jeanes' centre for the medical officer, and office and an increase of existing ward accommodation up to say, 15 beds. Gynaecological cases would be dealt with by transfer to the African Hospital, Zomba, which is only 10 miles away.

I would note that the Director of Education has been good enough to afford his approval to these proposals.

Laboratory Staff. Although the laboratory has been in service a few years only, the demands made upon it are increasing year by year and at the present time the staff is inadequate to undertake efficiently the thorough investigation of every specimen submitted. Medico-legal work is also increasing in volume and may be considered sufficient to occupy the whole time of one worker. A qualified European laboratory-assistant is urgently required not only to relieve the pathologist of tasks which might quite well be performed by a junior but also to take over charge of the laboratory and to keep open the majority of its many activities when the Pathologist proceeds on leave.

MEDICAL DEPARTMENT BUILDINGS.

European Hospitals. In the annual report for 1934, page 29, a case was made for the provision of a single new hospital to replace the two small and unsatisfactory buildings used as hospitals at Zomba and Blantyre. Up to the present time it has been found, for financial reasons, impossible to act on this recommendation.

A saving both in staff and expense would result if the proposal could be given effect to, as it would no doubt be possible to decrease the total number of sisters employed and to substitute a district surgeon or part-time practitioner for the medical officer in charge of one of the hospitals.

Medical Store. The present building is a converted bungalow and has been in use for many years, it is dark, inconvenient, uneconomic and inadequate in size. A new store building is urgently required.

Asylum. A new mental hospital (under the administration of the Medical Department) to replace the present prison-like institution would benefit immensely the unfortunate creatures who are incarcerated there, and who require and have a right to expect treatment for their mental disorder.

Laboratory. Although this is a comparatively new building, it is far from satisfactory, it is ill-designed and cannot be put in such a state of repair as to safeguard the equipment and records from damage by rain and white ants. It is inconvenient to work in and inadequate.

An up-to-date and well-designed laboratory is an essential requirement.

Legislature.

As had been previously stated, it is considered that advice on health matters would be more directly available, especially as the general development of any territory is so intimately connected with improvement in public health, if the Director of Medical Services were given a seat on the Executive Council of the Protectorate.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

A quarantine-camp was maintained during the year at Port Herald on the main railway-line from Beira to Blantyre for dealing with Asiatics and natives entering Nyasaland who may be suffering from or have been in contact with infectious diseases or who are unable to produce the necessary certificate of vaccination.

The number so detained during the year were:—

		Men		Women		Children
Natives	...	18	...	11	...	16
Asiatics	...	Nil	...	Nil	...	Nil

SECTION V.

MATERNITY AND CHILD WELFARE.

Progress in this most important branch of preventive medicine in this territory has been delayed for various reasons, chiefly financial.

The native female population, according to the 1931 census (including adults and children) was estimated at 847,671. During the year under review only 104 confinement cases were dealt with at government hospitals, of these cases only 26 were *normal*, a quarter of the total number of cases were in-patients at the African Hospital, Zomba, where a European sister is employed

There are no European nurses employed at any of the government African hospitals with the exception of Zomba. No women medical officers are employed by Government.

These factors make it difficult to recruit women for service with the medical department and make it no easy task either to attend to or to nurse women and children in-patients. Native customs are gradually being modified and increasing confidence is being displayed by the women in European methods of treatment. This fact is supported by the figures of the number of patients treated during the year, as 2,793 female in-patients out of a total number of 9,757 were attended to. At the out-patient departments 119,182 males and 38,420 females were treated. At the rural dispensaries 192,680 males and 122,784 females attended for treatment (1935 figures).

Much more could be done if more facilities for training were available and an increase made in the European nursing or health staff. At Zomba, as has been previously mentioned an infant welfare and maternity clinic was commenced in 1935, the only other Government institutions where an active interest is taken in the welfare of women and children is the Jeanes' school where two qualified European nurses are employed. Recently from monies derived from the Colonial Development Fund, three welfare clinics and three houses for health-sisters have been erected and it is unfortunate that financial circumstances have made it impossible for Government to utilize these buildings in the manner for which they were intended or to provide any European health-sisters or to develop the welfare side of the Medical Department's activities.

At the missions, however, where out of some twelve registered practitioners, four are fully-qualified women doctors, some training of midwives is undertaken and three infant welfare and maternity clinics are subsidized by Government to the extent of £700 per annum and it is interesting to note that in all three cases the staff provided is adequate and consists of a lady medical officer and a trained European sister. A scheme has been drawn up and has been approved whereby an additional grant will be made to the Blantyre Mission Hospital in order that training of midwives may continue.

A commencement has been made with the policy of affording medical relief to rural districts and during the year a native midwife, wife of the hospital assistant at Liwonde, and paid by the Medical Department, undertook successfully the supervision of 18 confinement cases in the district; a small maternity ward has now been erected at this dispensary and it is hoped that women will be encouraged to come in to this ward for normal labour.

A table is given below showing the number of confinements attended to at government institutions and in districts and at the mission centres which are subsidized by Government.

	No. of Infants admitted to welfare centre at hospital. On roll	New admittances	No. of Infants admitted to district welfare centre. On roll	New admittances	Mothers admitted to welfare hospital for abnormal confinements.	Total No. of confinements.		Infant Deaths			Maternal deaths
						At hospital	In the District	Miscellaneous	Still birth		
*Mlanda Mission	178†	18	239†	30	35	14	49	42	24	5	1
*Blantyre ...	177	—	63	—	69	45	114	210	—	68	11
*Bandawe ...	44	—	21	—	4	23	—	—	—	4	—
*Jeanes, Centre						13					
African Hospital, Zomba ...	219	—	—	—	19	11	—	—	—	11	2

* The Nursing Sister was on leave for about 8 months.

SECTION VI. HOSPITALS AND DISPENSARIES.

(a) European Hospitals.

Unfortunately there is nothing of moment to report with regard to these institutions. Financial considerations have so far made it impossible for a new hospital to be provided. The ideal would be the provision of a central institution at either Zomba or Blantyre, preferably at Zomba as facilities are more easily available, the erection of a new hospital at one of these centres would result in increased economy and efficiency as there is no doubt that the maintenance of two small hospitals, only 42 miles apart and served by a good all-weather road, is unsatisfactory and uneconomical both in staff and equipment. Small additions, renovations and improvements have been made from time to time with a view to keeping the hospitals in as good a condition as possible.

*Subsidized by Government grant.

†These figures indicate number of infants on register.

(b) Native hospitals.

General remarks. Perhaps one of the most noteworthy features of hospital practice is the increase in female patients, particularly at such centres as Zomba, where there are two European sisters and where the female wards are staffed with African females. The following figures speak for themselves :—

Percentage increase				
		1935	1936	
		Out-patients	In-patients	
Males	...	8%	...	7%
Females	...	18%	...	31%

The female wards are undoubtedly the heaviest as regards work yet there is no doubt that the atmosphere of these wards is more friendly and homely than the male wards.

The Colonial Development Fund provided this Protectorate a few years ago with many new hospitals and with additions to some of the old ones, unfortunately the resources of the country were unable to keep pace and to provide a sufficient and adequate personnel to staff these hospitals.

At only one of the African hospitals is clerical assistance provided, in consequence a large part of the valuable time of the medical officers is taken up with minor clerical duties, European staff also is lacking, there are no European sisters at any of the hospitals except Zomba.

Hospital dietaries have been put on a more satisfactory basis and with the exception of meat, which is difficult to get in some districts, a fairly adequate diet has been provided. In many instances hospital gardens have been established with considerable benefit to the patients.

Confidence in surgical methods has been satisfactorily retained, as at one small hospital of 50 beds, 209 major operations and 191 minor operations were performed during the year. Successful surgery certainly tends to popularize hospital practice and is a good means of propaganda. Spinal anaesthesia is particularly useful in an out-station where the surgeon's assistants are natives and only partially-trained, a short memorandum on this subject is considered to be of sufficient interest to warrant its publication as an appendix to this report.

A summary of the cases treated at native hospitals and rural dispensaries is given below :—

	1935			1936			Area in sq. miles	Rank of officer in charge	Density per square mile, 1931 Census
	Cases treated at Native Hospitals	Cases treated at Rural Dispensaries	Cases treated at Native Hospitals	Cases treated at Rural Dispensaries					
	In-Pts.	Out-Pts.	Out-Pts.	In-Pts.	Out-Pts.	Out-Pts.			
Blantyre and Limbe ...	—	4,472	30,012	16	15,118	18,184	860	S.M.O.	85.64
Chikwawa ...	309	4,248	13,038	344	3,917	33,383	1,897	S.A.S.	18.92
Chiradzulu ...	400	7,059	14,672	556	6,769	18,625	270	S.A.S.	296.77
Cholo ...	800	5,294	4,317	880	4,657	5,485	624	M.O.	94.79
Chinteché ...	739	7,589	8,856	475	11,896	8,918	1,925	Hosp. Asst.	23.06
Dowa ...	242	3,742	10,936	231	3,418	12,004	1,802	S.A.S. or Hosp. Asst.	64.41
Dedza ...	279	3,125	34,380	394	5,209	25,425	1,818	M.O.	76.06
Fort Johnston ...	1,278	12,404	5,184	650	9,355	7,191	2,518	M.O.	29.79
Fort Manning ...	403	2,939	7,309	380	3,107	14,620	1,453	S.A.S.	23.47
Karonga ...	666	7,593	23,520	751	9,098	24,457	3,004	M.O.	12.79
Kasungu ...	222	5,588	5,096	251	5,101	4,409	3,330	H.A.	10.95
Kota Kota ...	484	11,173	12,666	485	12,536	18,325	2,430	M.O.	45.17
Lilongwe ...	239	3,859	5,520	262	4,811	7,921	2,677	M.O.	51.90
Liwonde ...	218	3,574	11,529	199	3,667	12,165	2,045	Hosp. Asst.	16.29
Mlanje ...	655	8,847	12,038	602	7,524	15,031	1,531	M.O.	27.89
Mzimba ...	158	4,655	15,763	157	4,034	13,869	5,729	M.O. & S.A.S.	30.73
Neheu ...	321	7,456	15,126	341	7,405	13,628	1,092	Hosp. Asst.	69.22
Neno ...	—	—	37,248	—	—	—	941	S.A.S. Chikwawa	—
Port Herald ...	290	2,722	13,951	439	2,621	13,277	747	M.O. or S.A.S.	108.98
Zomba ...	1,701	9,072	33,903	1,819	10,038	30,340	903	M.O.	116.24
„ K.A.R. Hospital	146	3,589	—	—	—	—	—	„	—
„ C. Prison Hospital	494	2,422	—	—	3,470	—	—	„	—
„ Jeanes T. Centre	—	—	—	—	—	4,481	—	A. Mistress	—
Total ...	10,052	121,442	315,464	9,757	133,751	301,738	—	—	—

NOTE.—In the above table all patients attending for treatment are recorded in the first instance as out-patients whether or not they are subsequently admitted to hospital, to obtain the total of those who obtained out-patient treatment only the in-patient figures should be subtracted from the combined total.

(c) **Rural Dispensaries.** There are 93 rural dispensaries of which 36 are permanently-constructed in brick, iron and cement. The remainder are temporary daub and wattle structures. A standard treatment for all the diseases considered suitable for treatment at the rural dispensary has been issued, a standard equipment is laid down. Dispensers in charge are (where possible) brought in to the district hospital at the end of each month and undergo instruction in treatment and diagnosis of disease. The scope of the work of the rural dispensers has been developed and they are now expected to devote their afternoons to visiting the district in the vicinity of their dispensary, to give talks on hygiene to the villagers and to keep the population vaccinated. The training of all hospital dressers now includes training in the type of work likely to be met with at the dispensary and a model room with the standard equipment of drugs and dressings for a dispensary has been set up at the African Hospital, Zomba, which is the general training-centre for the country.

Two wives of native hospital-assistants have been trained as midwives and as time goes on it is hoped to encourage this procedure.

SECTION VII. PRISONS AND ASYLUM.

The Central Lunatic Asylum at Zomba accommodates between eighty and ninety mental patients and is under the administrative control of the Chief Commissioner of Police who is also Chief Inspector of Police and Asylums.

As a place of incarceration, the institution fills its role admirably as it is run efficiently and with discipline, but as a treatment centre for mental disease it is most inadequate.

In a report upon this institution made by two medical officers late in 1935 the following remarks were made:—

“The Central Lunatic Asylum is in Zomba. It is the only hospice open for the reception of certified lunatics, and has accommodation for 84 inmates who can be housed in separate ‘cells’. The medical attention is limited to the treatment of any bodily ailments from which the inmates suffer, their mental health remains without any skilled attention.

The Asylum is in charge of a lay superintendent and working under his instruction are attendants; these subordinates are untrained natives who act in more or less the same way as prison warders and who are devoid of any special knowledge concerned with the nursing of cases of mental illness. With the exception that the inmates are given as much freedom as their condition will permit, the whole asylum is essentially prison-like. Each subject has a separate cell in which he sleeps, but in the day-time he is allowed to wander in the yard and associate with other inmates irrespective of his mental impairment.

It is considered that the asylum should be converted into a mental hospital under direct control of the Medical Department and that a medical officer with special experience in psychiatry should be appointed to take charge”.

Financial conditions have presumably prevented any progress being made in the treatment of mental disease in Nyasaland and in the absence of medical supervision the use of mechanical restraint had become necessary and was much in vogue. However, during the year with care and patience much of this inhumane treatment has been abandoned and the peace and quietness and good order of the asylum has consequently improved.

Prison. There is little to say with regard to the Prison which is a very efficiently-run institution.

All new admissions are medically examined and vaccinated. Of 300 new prisoners examined during the year, 161 were found to be infected with various helminths. On the whole the health of the prisoners is good and there is a distinct difference between the short term and long term prisoners, the long term prisoners having healthy skins and well-muscled bodies. Malaria causes considerable disability and there was a total of 107 admissions from a daily average strength of 374. Of these 107, 53 were positive on blood examination.

SECTION VIII. METEOROLOGY.

SHOWING THE MAXIMUM, MINIMUM AND MEAN TEMPERATURE (FAHR.) AND TOTAL IN VARIOUS DISTRICTS DURING THE YEAR 1936.

District.	Station.	Height above Sea Level.	Air Temperature.					Rain.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			Means of		Absolute Max. and Min.			Total Fall Inches.	Maximum Fall in a Day.	Number of Days.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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SECTION IX. SCIENTIFIC.

(A) ANNUAL REPORT OF THE MEDICAL ENTOMOLOGIST FOR 1936.

2. **Tsetse Survey.** I spent fourteen days in May in the Northern Province for the purpose of making a reconnaissance for tsetse fly in the Dowa and Fort Manning Districts.

I left the Great North Road at the Lombadzi River in Dowa and, travelling afoot right through to Fort Manning along the southern edge of the fly-infested region, returned to Lilongwe through the area that was formerly menaced.

From this survey I reached the conclusion that the situation continues to improve, for the recession of the fly towards the north has been maintained, and except for a small focus south of the Ludzi at its junction with the Bua, where, however, the insects seem to be showing no tendency to spread nor to be on the increase, there seem to be none south of the former barrier line.

These regions were visited in July by Dr. B. D. Burt, the botanist attached to the Department of Tsetse Research in Tanganyika Territory who confirmed these conclusions.

2. **Miscellaneous Investigations.** *a.* I carried out a survey for the breeding places of the domestic species of flies in Zomba, in May and again in October, and a similar survey in November in the township of Fort Johnston.

b. In May I made a survey for mosquitoes of the *Aedes* group and their near allies, the potential carriers of yellow fever, in the neighbourhood of the Chileka and Zomba aerodromes. There proved to be no difficulty, even at that time of year, several weeks after the cessation of the rains, in finding the most notorious of these carriers, *Aedes aegypti* (= *Stegomyia fasciata*), for at Chileka the larvae occurred in abundance in a water-cooler on the verandah of the only European house there, that of the customs officer, while they hatched out in large numbers from debris obtained in rot-holes in trees near the Zomba aerodrome, a few hours after it had been thrown into water. Similar material obtained in the latter vicinity much later in the dry season, in August, also afforded larvae which completed their life cycle in the laboratory in due course.

I subsequently submitted a report, giving a list of sixteen species of *Aedes*, alone, which I have found in this country, giving some account of the distribution and breeding habits of eight of the more common forms.

c. From July to November I made a survey of the rodents of the South Nyasa District, and their ectoparasites. Examples of the more common species and their parasites have been submitted to authorities for determinations, but these have not yet been received.

The dominant domestic species is undoubtedly *Rattus rattus*, the black rat, which seems to occur in villages in considerable numbers, catches of six and seven at a time having been made by wire traps placed near grain stores.

3. **Research.** I carried out further experimental work designed to ascertain whether *Treponema pertenue*, the causative organisms of yaws, undergoes proliferation within *Musca sorbens*, a possibility which would seem to exist by reason of the fact that an allied organism, that causing relapsing fever, is known to multiply within certain other insects—*Pediculus vestimenti* and *Ornithodoros*. Having fed forty-five bred flies on a yaw in the infective stage I dissected one or two, day by day, staining and examining each part of the alimentary canal separately but without result. I further endeavoured to infect native volunteers by applying the gut of the flies, and its content day after day, to freshly-made scratches again without result.

b. I continued to work on the problem of the transmission of leprosy, studying the fate of the bacilli in the haematophagous fly, *Musca sorbens*, in particular.

I had obtained in the course of this investigation last year evidence tending to show that, provided the vitality of the organisms is not impaired by the action of the digestive juices of the insects, they might conceivably transmit the infection, either through the chance deposit of their excreta subsequent to a meal on leprous material, the chance fall of the vomit drop, or as the result of a purposive act—a feed, following the act of regurgitation, on a breach of surface of the skin. The main outcome of this work in the present year has been to show that there are some grounds for believing that the digestive tract of this insect is favourable, rather than the reverse, to the organisms, since it exhibits from proboscis to rectum the same staining reaction as they do, being acid fast.

I further ascertained that acid fast coccoid granules may be found, often in vast numbers, in the crop wall both of captured flies and bred ones fed on leprous material, in the case of the latter about five days from the infecting feed. Though none of these may bear any relationship at all to the bacilli, of course, for very similar bodies may be seen in flies that may not have had access at all to infected material, there would seem at least to be the possibility that reproduction of the organisms may take place in an environment as suitable as the crop wall appears to be, and that developmental forms may be set free from time to time in the crop content as the result of contractions of the organ, for rhythmic movements can be seen, even in the living insect, to be in constant progress.

c. I extended this investigation to the bug, *Cimex* species, feeding a series of fifty on an anaesthetic patch of skin of a leper, and examining the alimentary canal of five within an hour of their meal. In none of these could I detect the organisms and I was similarly unsuccessful in my examinations of one daily up to the 40th day.

d. I carried out examinations of the excreta of the tsetse fly, *G. morsitans*, with a view to further study of the flagellates sometimes passed by the fly. I fed flies known to be infected to a chameleon, a gecko and a fowl, examining the blood of these animals from time to time with a view to ascertaining if and when infection showed up. But without result.

I had hoped to be able to extend the investigation to crocodiles, but it was only towards the end of the year that I was able to obtain, through the kind assistance of Mr. C. E. Barker, the District Commissioner, Fort Johnston, a supply of eggs. I was then unsuccessful in securing infected flies, though I examined seventy-four, some taken near the crocodile-infested river and I was compelled to abandon the investigation owing to the imminence of my departure on leave.

e. I examined without success a long series of films of blood from cattle with a view to obtaining a strain of *Trypanosoma theileri*, and trying to work out its transmission, but without success.

Further attempts to obtain cultures were similarly unsuccessful.

f. I worked out some details of the life-history of the mites that infest *Musca sorbens* often in prodigious numbers. The parent mite seems to leave its host while in the act of oviposition, laying its eggs in the material selected by the fly. The larval mites collect on the puparia, chiefly at the cephalic end, at the suture through which emergence takes place. They then move forward with great rapidity as the insect emerges, and attach themselves to it.

g. I continued to make some study of the life-histories of Tabanidae. In the course of this work I ascertained that the larvae of a third species of Tabanus, *T. fraternus*, make mud cylinders prior to pupation, in the same way as *T. taeniola* and *T. biguttatus*, as I have previously described. *T. fraternus*, moreover, has its own special breeding-grounds in which its cylinders, and those of no other are found, as have the other two species.

From Tabanid larvae obtained in rot-holes in trees I succeeded, after long endeavour, in breeding out two more species, new to me and as yet undetermined, and a third, probably a species of *Thriambeutes*, the last in some numbers.

4. The following papers were published during the year:—

a. "A possible Reservoir Host of *Trypanosoma Rhodesiense*," by W. H. LAMBORN, O.B.E., M.R.C.S., L.R.C.P., AND C. H. HOWAT, M.B., B.CH., D.T.M. and H. (*British Medical Journal*, 6th June, 1936).

b. "The Experimental Transmission to Man of *Treponema pertenue* by the Fly *Musca sorbens*, Weid." (*Journal of Trop. Med. and Hygiene*, 15th October, 1936.)

19th December, 1936.

W. A. LAMBORN,
Medical Entomologist.

B. ANNUAL REPORT OF THE GOVERNMENT PATHOLOGIST, ZOMBA, 1936.

Staff.

The Government Pathologist : Dr. Horace M. Shelley.

African Laboratory Assistant : Rabson German.

Third Grade Dispenser : Damson Boloweza.

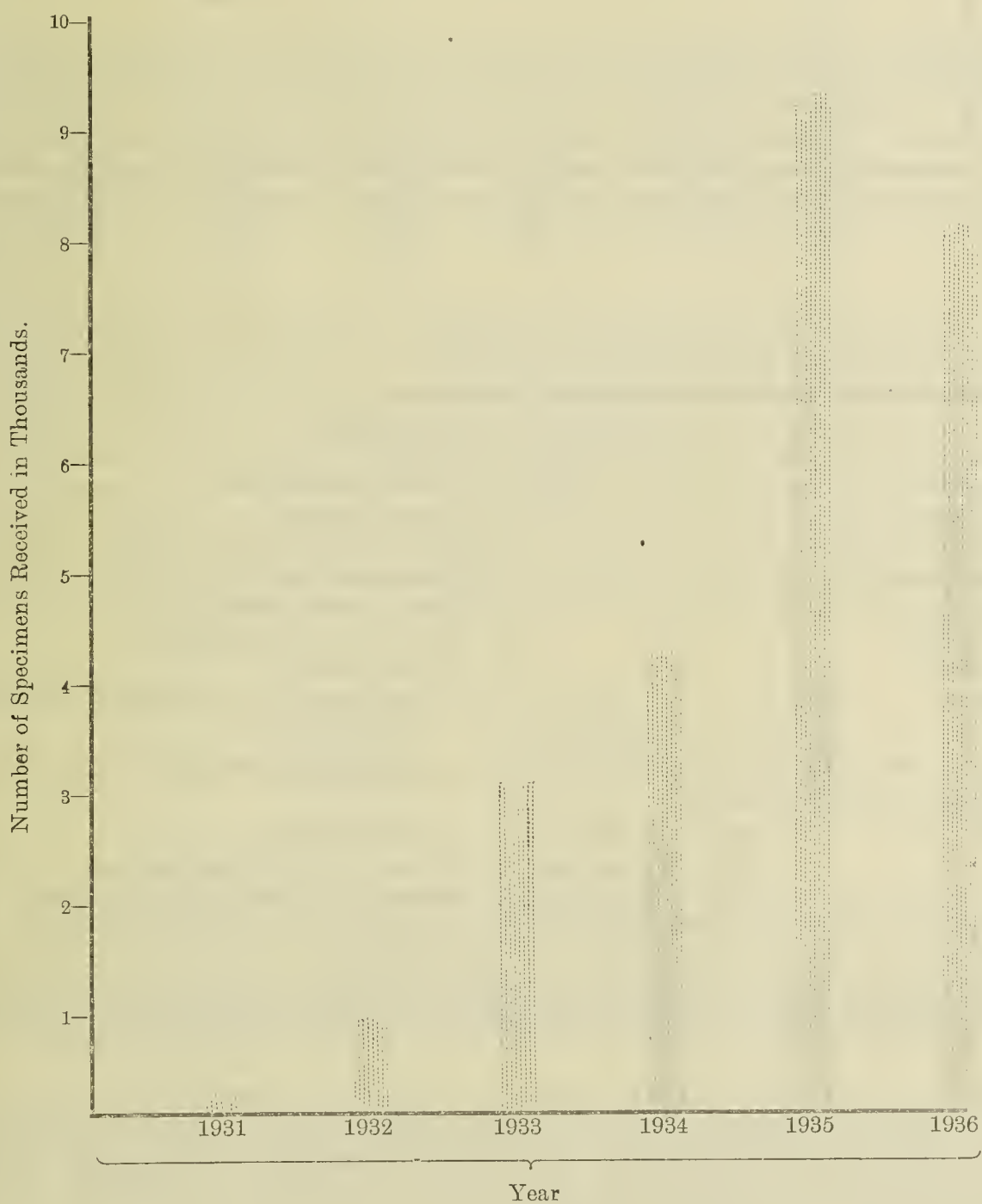
Labourers : three,

Night watchman : one.

Section 1. General Review of the Year.

A total of over 8,100 specimens were received for examination during the year, varying from simple blood smears to specimens requiring complicated analyses. As far as possible, all requests for laboratory assistance were fulfilled, which entailed a great amount of extra labour for the small and inadequate staff employed.

The chart below shows how the number of specimens have increased progressively since the year 1931.



Section 2. Buildings.

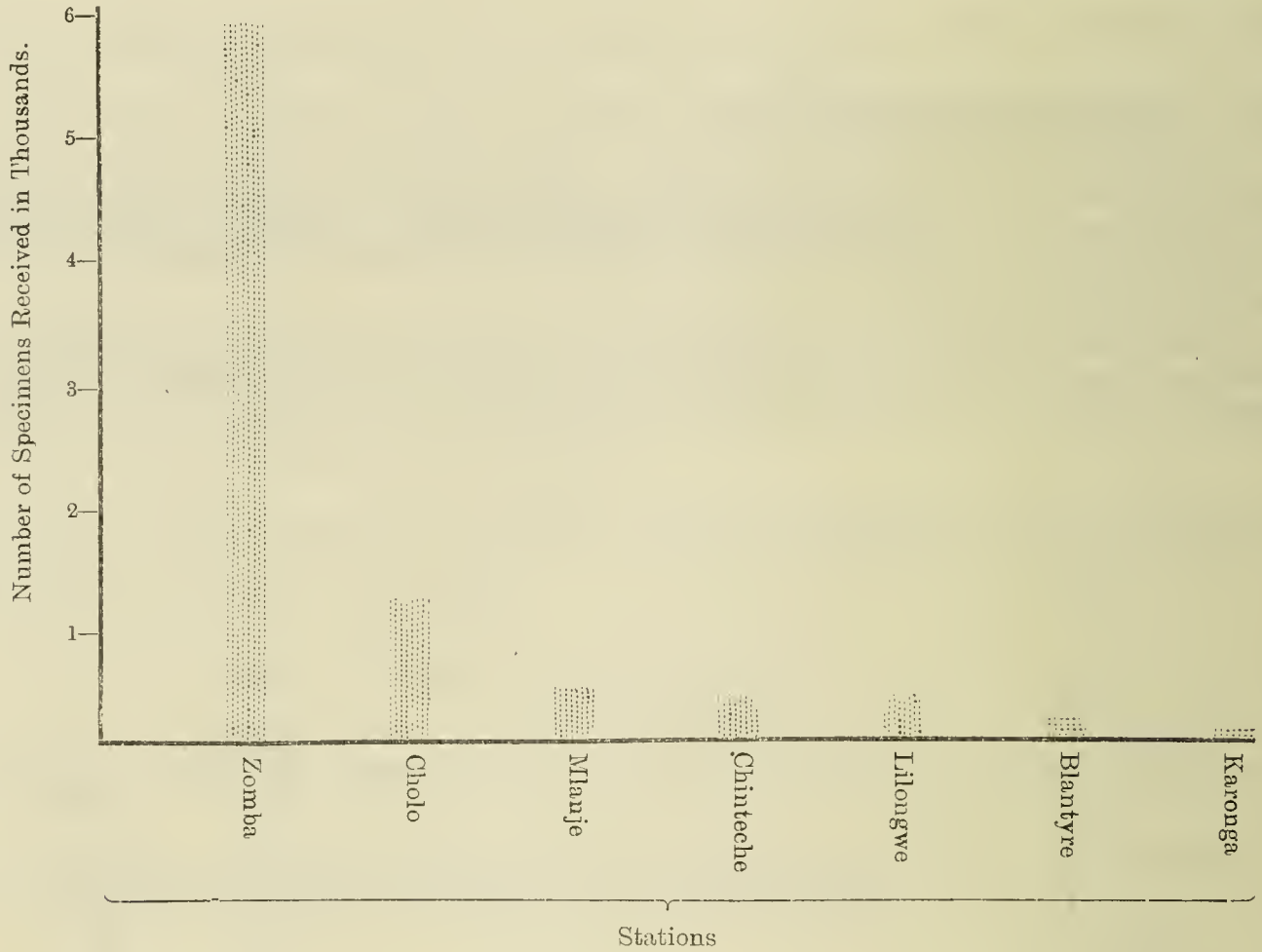
A small animal house is in process of construction, and should when completed greatly facilitate the accuracy of animal experimentation.

Section 3. Centres from which Specimens were Received.

Specimens were received from the undermentioned stations.

Station.	Number of specimens.	Station.	Number of specimens.
Zomba	5,985	Fort Manning	11
Cholo	1,049	Port Herald	6
Mlanje	331	Chikwawa	7
Chinteché	301	Chiradzulu	3
Lilongwe	237	Limbe	2
Blantyre	41	Kasungu	3
Karonga	37	Veterinary Department	4
Mkhoma	37	Kota-Kota	1
Fort Johnston	27	Likoma	1
Blantyre Mission	14	Malamulo	1

The specimens received from the chief stations are shown in graph form in the accompanying chart.



Section 4. Pathological and Bacteriological Specimens.

(A) BLOOD SPECIMENS.

Films for parasites	3,229	Blood fragility test	1
Sachs-Georgi tests	372	Transfusions	1
Agglutination tests	99	Measurement of red cells	39
Weil-Felix reactions	2	Blood cultures	11
Blood counts	39	Blood sugar estimations	6
Differential counts	40	Blood urea estimations	3
Reticulocyte counts	33	Aldehyde test	3
Blood groupings	187	Collection of sera for yellow fever pro-	
Arneeth counts	8	tection tests	20

(1) *Malaria, etc.* Out of a total of 3,229 films examined, 1,098 (34 per cent.), were found to contain parasites as detailed below :—

<i>P. falciparum</i>	796 (72 per cent.)	Mixed infections :—	
<i>P. malariae</i>	230 (21 per cent.)	<i>P. vivax</i> and <i>P. falciparum</i> 4	(0.3 per cent.)
<i>P. vivax</i>	39 (3 per cent.)	<i>P. malariae</i> and <i>P. falciparum</i> 8	(0.6 per cent.)
Indeterminate	4 (0.3 per cent.)	Gametes were present in 45 films	(4 per cent.)
		<i>T. duttoni</i>	21 (1.9 per cent.)

It will be noticed that the incidence of malarial species corresponds closely to the figures published by Gordon Thomson in the Proceedings of the Royal Society of Medicine, vol. 28, page 395, 1934.

(2) *Modified Sachs-Georgi test for syphilis.* 170 tests out of a total of 372, proved positive. The test has proved very reliable and has shown a high incidence of correspondence with clinical observations. It is regrettable, however, that it is not possible to distinguish yaws from syphilis by serological means, but it is probable that most of the positive results mentioned above were given by sera from cases of active clinical syphilis.

(3) *Agglutination tests.* Formalised broth cultures of the enteric group of organisms and *Brucella melitensis* were used in these tests. 5 tests were positive as follows :—

<i>B. typhosus</i>	3.
<i>B. paratyphosus</i> A.	1.
<i>Brucella melitensis</i>	1.

(4) *Weil-Felix reaction.* Two tests were performed, one of which was positive. This latter result was given by the serum from a European patient admitted into hospital with clinical typhus, during the latter part of the year 1935. It is of interest to note the results of tests made on several occasions.

Date.	Organism.	Dilutions of serum :—1/40. 1/80. 1/160. 1/320. 1/640.				
3.12.35.	Proteus X19.	—	—	—	—	—
14.12.35.	Proteus X19.	+	+	—	—	—
	Proteus OX2.	+	+	+	—	—
31.12.35.	Proteus X19.	+	+	+	—	—
	Proteus OX2.	+	+	+	—	—
	Proteus OXK.	+	+	—	—	—
1.1.36.	Proteus X19.	+	+	+	—	—
	Proteus OX2.	+	+	+	—	—
	Proteus OXK.	+	+	—	—	—

(5) *Blood cultures.* Total number 11, of which 7 were positive. From two of the positive sera meningococci were isolated. One of these patients was a European male who had suffered from a septicaemic type of illness for many months, all the usual investigations including repeated agglutination tests being negative. Apart from fever associated with occasional rigors, the patient complained of a sore throat and pain in the joints of a fleeting nature. A specimen of his blood was inoculated direct into glucose broth and incubated at 37 degrees centigrade for 24 hours, when a hanging drop preparation was examined and revealed the presence of gram negative, non-motile diplococci. The following sugars were then inoculated from the original broth culture, glucose, lactose, saccharose, maltose, mannite, and the organism was found to ferment glucose, maltose and mannite. Further sub-cultures failed, the organism having died in the interim.

Owing to the absence of confirmation by animal experiment, it is not possible to state with absolute dogmatism that the organism concerned was the meningococcus, but the preliminary investigations support the view that the organism belonged to that species. In the absence of any other clinical laboratory findings beyond a polymorph, leucocytosis, the evidence strongly favours the view that the patient was suffering from a chronic meningococcaemia, and it is of interest to note that two cases of a similar nature were reported in the Proceedings of the Royal Society of Medicine. vol. 29, No. 10, 1936. (The writer is indebted to Dr. L. C. Mayne for the clinical details).

(6) *Blood groupings.* 187 specimens of blood from adult African males were grouped during the year, by the method detailed below. Testing sera of groups A and B, of a reasonably high titre were obtained from healthy middle-aged individuals. Fresh blood cell suspensions were made from each subject tested, by mixing a few drops from a finger-prick with 5 c.cm. of normal saline in a test tube. One drop of group A serum was placed on one end of a slide, and one drop of group B serum on the other, then one drop of the cell suspension of equal size was added to each serum. The slide was then tilted from side to side, for two minutes to facilitate mixing, and then a clean sterile cover-slip was applied over each separate mixture and the specimen examined microscopically after an interval of ten minutes, and again after a further interval of thirty minutes, when the results were recorded. The incidences of the various groups were as follows :—

Group O	...	52.2%	+	—	2.38
Group A	...	22.2%	+	—	1.91
Group B	...	25.%	+	—	1.60
Group AB	...	0.5%			

It is of interest to contrast the aforementioned results with those obtained by Pirie after an examination of 250 Bantu natives in South Africa. He found that 52 per cent. belonged to Group O, 27.2 per cent. to Group A, 19.2 per cent. to Group B, and 1.6 per cent. to Group AB. It is thus apparent that there is a slight difference in the incidence of Group A and Group B, the latter being more common in the case of the Nyasa native than A as it is also in the West African native. (Lewis and Henderson).

In Europeans, Group A has a much higher incidence than Group B and in certain of the Chinese the reverse is the case and thus the relative incidences of the blood groups are of some anthropological interest, in fact, the Hirszfelds have pointed out that the frequency of agglutinin A decreases from west to east, while the frequency of agglutinin B increases. They also found that peoples could be roughly subdivided into three groups on the basis of the frequency of factors A and B, the ratio of which was called the "biochemical index," and which was calculated by dividing the sum of the frequencies of Groups A and AB, by the sum of the frequencies for Groups B and AB, thus index = $\frac{A + AB}{B + AB}$

By this means three types were determined, a European type with index 1.3 to 1.8, and an Asio-African type with an index of 1 or less. The Nyasaland natives have an index of 0.8 and thus fall into the latter type.

Incidence of the blood groups in members of the chief tribes of Nyasaland.

The figures mentioned below must be accepted with a certain amount of reserve, owing to the comparatively small number of persons examined.

<i>Tribe.</i>	<i>Number examined</i>			<i>O.</i>	<i>A.</i>			<i>B.</i>		<i>AB.</i>	<i>Index.</i>	
Yao	...	32	...	56.2	...	21.8	...	21.8	...	—	...	1
Ngoni	...	52	...	48	...	28.8	...	23	...	—	...	1.2
Nyanja	...	32	...	43.7	...	18.7	...	34.3	...	3.1	...	0.5
Nguru	...	28	...	57.1	...	17.8	...	25	...	—	...	0.7

Note : Group incidence is mentioned as a percentage.

(B) FAECAL SPECIMENS.

Total number of specimens examined	...	...	1,482
Examinations for helminths and protozoa	...	...	1,482
Negative examinations	...	...	896
Positive examinations	...	...	586

The undermentioned parasites were found in the positive specimens :

Hookworm	...	...	...	415
<i>S. mansoni</i>	...	...	...	25
<i>S. haematobium</i>	...	...	...	1
Ascaris ova	...	...	...	23
Enterobius ova	...	...	...	2
Taenia ova	...	...	...	1
Trichuris ova	...	...	...	1
Strongyloides larvae	...	...	...	3
<i>E. histolytica</i>	...	...	...	79
<i>E. coli</i>	...	...	...	8
<i>Trichomonas hom.</i>	...	...	...	1
<i>Giardia intestinalis</i>	...	...	...	1
<i>Myiasis Drosophila</i> larvae	...	...	...	2
Bacteriological examinations	...	...	...	17

(1) *The relative incidence of parasites found in the stools of Africans.*

These results are based on the examination of over 6,000 specimens by the simple smear method, four smears being searched previous to recording a negative result.

<i>Parasite.</i>	<i>Percentage incidence.</i>	
Hookworm	...	31.6
<i>Bilharzia mansoni</i>	...	2.3
<i>Bilharzia haematobium</i>	...	0.08
<i>Ascaris lumbricoides</i>	...	2.7
<i>Enterobius vermicularis</i>	...	0.17
<i>Trichuris trichiura</i>	...	0.21
<i>Taenia saginata</i>	...	0.14
<i>Trichostrongylus</i>	...	0.47
<i>Hymenolepis nana</i>	...	0.15
<i>Entamoeba histolytica</i>	...	3.7
<i>Entamoeba coli</i>	...	5.5
<i>Balantidium coli</i>	...	0.05
<i>Giardia lamblia</i>	...	0.2

(2) *Cultures of faeces.*

Four specimens gave positive cultural tests for dysenteric organisms, thus :

<i>Bacillus dysenteriae</i> Flexner "V"	...	3
<i>Bacillus gaertner</i> enteritidis	...	1
<i>Bacillus typhosum</i>	...	1

(1) *Amoebiasis and Charcot-Leyden crystals.*

In the diagnosis of amoebiasis of the intestinal tract, full use has been made of fixed and stained smears as a confirmatory measure.

The presence of Charcot-Leyden crystals has not proved of much assistance in diagnosis, as they may appear in the faeces irrespective of any protozoal or helminthic infestation. They have been observed repeatedly in the stools of certain European children who have never manifested any other evidence of intestinal parasitization, and their presence can only have been due to some metabolic upset.

It is known that the crystals appear in the sputa of asthmatics, and in the faeces of patients suffering from amoebiasis or helminthiasis, but it does not appear to be known what proportion of "normal" individuals excrete such crystals in the sputa and faeces. It would therefore seem of prime importance to investigate this latter point, previous to considering the presence of such crystals of any great diagnostic value.

(4) *Intestinal myiasis.*

Two cases occurred in natives during the year, the larvae of *Drosophila* being found in fresh specimens of faeces.

(C) URINE SPECIMENS.

Total number of specimens examined	...	...	...	1,143
Bacteriological cultures	...	...	...	2
Animal inoculations for T. B.	...	...	...	2
Urea estimations	...	...	...	4
Sugar estimations	...	...	...	1
Diazo reaction and Russo's test	...	...	...	4

Each specimen was examined chemically, cytologically, and centrifuged samples were searched for helminth ova.

Incidence of infestation of urinary tract of Africans by Bilharzia haematobium.

22.3 per cent. of the urine specimens in the period under review contained ova of *B. haematobium*,

The percentage incidence in 3,000 consecutive specimens of native urines examined during the two years 1935-36 was 20.7. This figure suggests a higher incidence of infestation in the local natives than in those of Southern Rhodesia, where the percentage incidence was 18.

(D) EXAMINATIONS OF SPUTA.

Total number of specimens examined	...	...	...	109
Total number of specimens examined for <i>Mycobact. tuberculosis</i>	...	...	...	97
Positive for <i>Mycobact. tuberculosis</i>	...	...	...	14
Typing pneumococci	...	...	...	8
Cultures	...	...	...	2

(1) *Typing pneumococci in sputum.*

Eight specimens were tested and the type of pneumococci present determined successfully in seven.

Type 1 Pneumococci	...	...	...	1
" 2	"	...	...	Nil
" 3	"	...	...	1
" 4	"	...	...	5

(2) *Actinomycosis of the lungs.*

Streptothrix actinomycosae was discovered in the sputum of a European patient, who had signs of lung involvement.

(E) EXAMINATION OF CEREBRO-SPINAL FLUID.

Total number of specimens examined	...	...	...	16
Cell counts	...	...	...	16
Nonne-Appelt globulin tests	...	...	...	12
Colloidal gold tests	...	...	...	6

(F) EXAMINATION OF THROAT SWABS.

Total number examined	...	...	...	66
Number positive for <i>Corynebact. diphtheriae</i>	...	...	...	6
Total number of cultures for <i>Corynebact. diphtheriae</i>	...	...	...	30
Total number of cultures positive	...	...	...	6

(Note :—Animal inoculation* not carried out).

(G) EXAMINATION OF PUS SMEARS, DISCHARGES AND SCRAPINGS

Total number of smears examined for <i>Neisseria gonorrhoeae</i>	...	...	...	66
Total number of smears examined for <i>Treponema pallidum</i>	...	...	...	46
Total number of scrapings examined for <i>Mycobact. leprae</i>	...	...	...	36
Total number of cervical smears examined for <i>Neisseria gonorrhoeae</i>	...	...	...	35
Total number of pus smears examined	...	...	...	50
Total number of pus effusion fluids examined	...	...	...	1

Method of examining sore for T. pallidum.

The dark ground method though almost ideal, is too difficult to be carried out by the native staff, but the following modification of Fontana's method has the combined merits of reliability and simplicity.

- (1) Smear is fixed with 90 per cent. alcohol for 1 minute.
- (2) Tannic acid mordant is applied and the slide heated until vapour just rises.
- (3) The preparation is now washed in water.
- (4) It is next covered with hot carbol-fuchsin and heated to steaming for 20 seconds.
- (5) The preparation is washed, dried, and examined.

The treponemata appear a pinkish violet colour, and stand out prominently.

(H) MISCELLANEOUS EXAMINATIONS AND TESTS.

Skin sensitizing tests for asthma	...	...	1
Water analyses	...	...	26
Gastric analyses	...	...	1
Miscellaneous analyses	...	...	4
Modified Bendien test for malignancy			2
Dogs' brains for rabies	...	...	2
Cow's brain for rabies	...	...	1
Mosquitoes for identification	...	...	30
Snails	„	„	7
Insects	„	„	2
Rats	„	„	4
Ticks	„	„	40
Milk specimens for general examination	...	...	4
Microscopes for examination and repair	...	...	3
Cockroaches examined for the presence of			
<i>E. histolytica</i> cysts	...	...	532
Others	...	...	6

(1) *Fungus growing on the paint-work of the Zambesi Bridge.*

It was noted by the engineers that shortly after applying a coat of paint to the metalwork the paint became brittle and peeled off. Several kinds of pigment were tried with unsuccessful results, and eventually specimens of the peelings were forwarded to the laboratory for investigations. Cultures were made and the trouble traced to the presence of a "lichen" in association with a bacillus, both organisms apparently obtaining their nutriment from the oily basis of the paint.

(2) *Examination of the gut contents of cockroaches for the presence of E. histolytica cysts.*

Most of the cockroaches examined were collected from buildings in the vicinity of native latrines in the township of Zomba. *Endamoeba blattae* was observed in the majority of specimens but in no case were cysts of *E. histolytica* discovered.

(I) MANUFACTURE OF VACCINES.

The undermentioned vaccines were manufactured during the year.

Antipyorrhoeal	...	...	200 c.cm.
Anti-acne	...	...	200 c.cm.
Antistaphylococcal	...	...	400 c.cm.
Anticatarrhal	...	...	1,000 c.cm.
Coliform	...	...	400 c.cm.
Anti-Gonococcal	...	...	400 c.cm.

(J) MANUFACTURE OF MEDIA AND REAGENTS FOR ISSUE TO STATIONS.

Nutrient broth	...	...	4,000 c.cm.
Agar-agar	...	...	700 c.cm.
Blood serum medium	...	...	400 c.cm.
Benedict's solution	...	...	5,000 c.cm.

(K) HISTOLOGICAL EXAMINATION OF OF TISSUES.

61 separate tissues were sectioned and examined as follows:—

Angiomata	...	...	1
Adamantinoma	...	...	1
Juxta articular nodule	...	...	1
Fibromata	...	...	3
Thyro-adenomata	...	...	2
Cystic adenoma of scalp	...	...	1
/Fibro-adenoma	...	...	1
Keloids	...	...	2
Chondromata	...	...	1

Dermoids	...	...	...	1
Myxoma	...	...	...	1
Lymphadenoma	...	...	...	1
Ovarian cyst	...	...	...	1
Hydronephrosis	...	...	...	1
Carcinomata :				
Squamous celled	...	...	...	8
Spheroidal celled	...	...	...	1
Melanotic	...	...	...	1
Sarcomata :				
Round celled	...	...	...	1
Osteo-	...	...	...	1
Glio-	...	...	...	1
Filarial tissues	...	...	...	2
Onchocerca tumours	...	...	...	2
Molluscum fibrosum	...	...	...	1
Tuberculous glands	...	...	...	3
„ epididymis	...	...	...	1
Tuberculoma	...	...	...	1
Chronic septic adenitis	...	...	...	2
Coccidial granuloma	...	...	...	1
Pyosalpinx	...	...	...	1
Gon. epididymis	...	...	...	1
Bilharzial appendices	...	...	...	7
Actinomycosis	...	...	...	1
Leprotic nerve	...	...	...	1
Heart	...	...	...	1
Unidentified tumours	...	...	...	2
Miscellaneous tissues	...	...	...	2

Tissues of special interest.

(1) *Cystic adenoma of scalp.* The specimen was removed by Dr. H. D. Cronyn at an operation on an aged native male. In size it was slightly larger than a pigeon's egg and had ulcerated on the surface. Histological examination, confirmed the microscopical evidence of surface ulceration, but in addition there were present many glandular elements of a sebaceous type associated with dilatation of the ducts. These glandular elements were in many cases arranged in circumscribed islets. A down-growth of epithelial cells was observed at one point. These appearances suggest that the tumour was a cystic adenoma (Brooke's tumour).

(2) *Adamantinoma of Jaw.* The patient was a young adult native male seen by Dr. C. H. Howat, who removed a small portion of the growth for purposes of biopsy. Examination of sections revealed the tumour to consist of two distinct regions, the first situated superficially was composed of a fantastic network of epithelial cells of basal type, and the second situated deep to the first consisted of an aggregation of cellular islets, which had the appearance of glandular structures until examined in greater detail, when they were found to consist of masses of large spheroidal cells; some of these islets had a lumen towards the centre, and were separated from each other by a small amount of interstitial tissue, in which dilated blood vessels were prominent.

(L) AUTOPSIES.

(Excluding those of a medico-legal nature).

(1) Lenticular degeneration and cirrhosis of liver	...	...	...	1
(2) Spongioblastoma of right frontal lobe	...	...	...	1
(3) Pulmonary tuberculosis	...	...	...	1
(4) Thrombosis of cerebral sinuses	...	...	...	1
(5) Status epilepticus	...	...	...	1
(6) Pneumococcal meningitis	...	...	...	1
(7) Lobar pneumonia	...	...	...	3
(8) Broncho-pneumonia	...	...	...	2
(9) Abscess of lung	...	...	...	1
(10) Acute toxic hepatitis	...	...	...	1
(11) Sarcoma of ilium	...	...	...	1

Autopsies of Special Interest.

(1) *Lenticular degeneration and cirrhosis of the liver.* The patient was an emaciated native male aged about 53 years. He had been an inmate of the Central Lunatic Asylum for some time suffering from a clinical syndrome in which involuntary tremors of a choreiform and athetoid type were present, associated with loss of facial expression, dysarthria, and increasing helplessness. His mouth was kept open and saliva dribbled down on to his chin.

Autopsy revealed a bilateral and symmetrical necrosis of the lenticular nuclei, associated with some general atrophy of the cortex and a multilobular cirrhosis of the liver.

(2) *Spongioblastoma of the right frontal lobe.* The patient was a soldier in the local regiment, about 42 years of age, and of excellent physique. His only complaint was severe headache which had persisted for some weeks. His mentality and general functions were normal, and no signs of organic disease of the nervous system were elicited on examination, except a slight papiloedema of the right disc. He gradually passed into a state of coma and died. Autopsy revealed a cortical tumour, the size of a large plum, on the under surface of the right frontal lobe. On section the tumour was found to be a spongioblastoma.

(3) *Death during status epilepticus.* The patient was an adult male epileptic who died during *status epilepticus*. Autopsy revealed no abnormalities, beyond marked injection of the cortical vessels of the brain in association with an excess of cerebrospinal fluid.

Section 5. The Medical Museum.

Numerous additions to the collection of specimens have been made during the year, and in order to still further increase the value of the museum a representative exhibition of drugs and preparations used in the treatment of tropical ailments has been arranged.

The museum premises, although only occupied last year, are in use to full capacity, and it is anticipated that further accommodation will be required during the course of the next few months.

Section 6. Medico-Legal Examinations.

The following examinations and tests were undertaken during the year.

Complete analyses of viscera for poisons	..	91
Histological examination of tissues		50
Examinations for seminal stains		12
Examinations for blood stains		72
Precipitin test for human blood		61
Blood grouping of stains		54
Examinations of suspected human remains	...	155
Chemical examination of invisible writings	...	4
Autopsies		16

This section of the work is increasing in volume and importance from year to year, in fact it is now no longer possible to cope efficiently with all the demands for laboratory assistance. The volume of labour involved in conducting the numerous examinations is almost sufficient to occupy a wholtime worker, and unless a suitable assistant can be engaged it will be necessary to limit these investigations to the minimum.

There is a tremendous field for research in connection with this work, but under existing circumstances it is not possible to do more than "scratch the surface," a fact which is to be much regretted.

(a) *Poison analyses.* Out of a total of 91 complete analyses of viscera and stomach contents, poisonous or noxious substances were discovered in 13, (14.3%). These positive results were as follows:—

Poisoning agent.	<i>Mylabris bihumerosa</i>	...	...	3
"	<i>Erythrophloeum guineense</i>	...	...	1
"	<i>Cannabis sativa</i>	...	...	1
"	Tobacco	...	...	1
"	Copper sulphate	...	...	1
"	<i>Amanita muscaria</i>	...	...	1
"	Bamboo hairs	...	...	1

(b) *Histological examination of tissues.* 50 tissues were examined with a view to determining whether or not certain injuries were of ante or post-mortem origin.

(c) *Examination of blood stains.* The haemochromogen test has been used constantly in the preliminary examination of suspected stains. It has been found that false negative results may occur if the reagent (Takayama's solution), is kept in use for a longer period than two weeks. The difficulty in obtaining a reliable supply of anti-human serum for the precipitin test has at last been solved. The Saxon Serum Works, Dresden, Germany, issue serum of excellent quality which retains its active properties for many months under the usual conditions of storage.

(d) *Autopsies.* 16 antopsies were performed on the request of the legal authorities during the year. The causes of death were as follows:—

Homicidal assault	...	...	7
Strangulation	...	...	2
Cantharides poisoning	...	...	1
Suicidal hanging	...	...	2
Lightning	...	...	1
Phthisis	...	...	1
Undetermined	...	...	2

(1) *Death by Lightning.* The subject was a well-nourished native female aged 38 years. During a thunderstorm she was busy crushing maize under the shade of a large tree, and she had her small child attached to her back. Suddenly a flash of lightning was observed to strike the tree, and co-incident with the flash the woman fell dead. The infant was uninjured. Autopsy revealed, one linear burn two inches long on the right side of the lower abdomen, two round burns, each the size of a five shilling piece, one over the back of each buttock, one large irregular burn over the back of the shoulder and one long linear burn over the lower third of the vertebral column.

Arborescent markings over the back. At the time of the accident the woman was wearing a cloth, fastened round the waist and extending down to the knees. There were present in this cloth two irregular holes in a region immediately co-incident with the burns on the buttocks.

(2) *Cantharidin poisoning.* The subject was a well-nourished native female aged 40 years. Portions of the body of the insect *Mylabris bihumerosa* were discovered in the stomach contents.

Autopsy revealed the presence of $\frac{1}{2}$ pint of sanguinous fluid in the peritoneal cavity, numerous areas of petechial haemorrhage in the middle and lower thirds of the lesser curvature of the stomach, marked congestion of the upper foot of the small bowel, associated with scattered areas of haemorrhage, marked congestion of the kidneys with haemorrhage into the tubules, and marked congestion of the ovaries and uterus.

(3) *An analysis of a series of sixty-seven autopsies performed on Africans.*

Of this series, 55 of the subjects were males and the remainder females. Fifty of the autopsies were made on the request of the legal authorities.

(a) AUTOPSIES ON HOSPITAL PATIENTS. Total 27. The causes of death were as detailed below.

(a) Tuberculosis.

Phthisis	...	...	3	} = 5 (18.5%).
Miliary	...	...	1	
Peritonitis	...	...	1	

(b) Pneumococcal infections.

Pneumonia	...	...	2	} = 7 (25.9%).
Abscess of brain	...	...	1	
Peritonitis	...	...	1	
Meningitis	...	...	1	
Generalized	...	...	2	

(c) Tumours.

Brain astrocytoma	...	...	1	} = 4 (14.8%).
Sarcoma of ilium	...	...	1	
Cancer of breast	...	...	1	

(d) Lesions of brain other than tumours.

Lenticular degen.	...	...	1	} = 6 (22.2%).
Sinus thrombosis	...	...	1	
Status epilepticus	...	...	1	
General paralysis	...	...	1	
Malaria	...	...	1	
Cysticerciasis	...	...	1	

(e) Lesions of the lungs other than tuberculosis and pneumonia.

Abscess	...	...	1	= 1 (3.7%).
---------	-----	-----	---	-------------

(f) Lesions of the liver ... Cirrhosis ... 1 = 1 (3.7%)

(g) Dietary ... Emaciation ... 1 = 1 (3.7%)

(h) Accidental poisoning ... Antimony ... 1 = 1 (3.7%)

(b) MEDICO-LEGAL AUTOPSIES. The causes of death were as follows:—

(a) Suicidal hanging	...	...	...	8	(16%)
(b) Homicidal assault	...	...	...	13	(26%)
(c) Lightning	...	...	...	1	(2%)
(d) Asphyxia	...	...	...	4	(8%)
(e) Phthisis	...	...	...	1	(2%)
(f) Poisoning	...	...	...	7	(14%)
(g) No cause ascertained	...	...	...	3	(6%)
(h) Pneumococcal infections	...	...	...	5	(10%)
(i) Malaria	...	...	...	1	(2%)
(j) Shock	...	...	...	4	(8%)
(k) Ruptured spleen	...	...	...	1	(2%)
(l) Mesenteric thrombosis	...	...	...	1	(2%)
(m) Syncope (F.B. in heart)	...	...	...	1	(2%)

(a) *Suicidal hanging.* 16 per cent. of the series were deaths due to this cause, a mode of terminating life which appears to be increasing in frequency from year to year. All the subjects were villagers, and none of them had received any education. Suicide is invariably committed at some place other than the subject's dwelling, and usually at night time.

Details of the cases are mentioned below.

Age of subject.	Sex.	Tribe.	Method Used.	Probable reason for ending life.
50 years	Male	Nguru	Loin cloth suspended from tree ...	?
28 years	Male	Nguru	Bark string suspended from tree ...	Love affair
40 years	Male	Yao	Bark string suspended from door frame ...	A leper
21 years	Male	Nyanja	Loin cloth suspended from tree ...	?
25 years	Male	Nguru	do	Advanced phthisis
35 years	Male	Ngoni	Rope suspended from tree ...	Large scrotal hernia
40 years	Male	Ngoni	Loin cloth suspended from tree ...	?
50 years	Female	Nguru	do	A lonely widow

(b) *Homicidal assault.* 26 per cent. of the deaths were due to this cause. The methods employed were as follows.

Age.	Sex.	Tribe.	Number of wounds.	Injuries other than wounds.	Weapon used
38 years.	M.	Nguru	Five	—	Pointed knife
58 years.	M.	Nguru	Three	—	Sword
26 years.	F.	Nyanja	Three	Comminuted fracture of occiput ...	Knobkerry and knife
33 years.	M.	Nguru	Nine	—	Razor
33 years.	M.	Nyanja	—	Comminuted fracture of skull. Intracranial haemorrhage ...	Knobkerry
32 years.	M.	Achewa	One	Fracture of skull	Motor car file
60 years.	M.	Achewa	—	Intracranial haemorrhage ...	Blow on head with fist
45 years.	M.	Nguru	One	—	Pointed knife
40 years.	M.	—	Two	Fracture of five ribs.	Hoe handle
30 years.	F.	Yao	Five	Fracture of maxillae	Axe
36 years.	F.	—	One	—	Knife
24 years.	F.	Yao	—	Intracranial haemorrhage ...	Knobkerry

It will be noted that the weapon chosen in over 50 per cent. of the assaults was a cutting instrument such as, a knife, razor or axe, and with two exceptions the injuries inflicted were multiple. The other weapons used consisted of weapons with a small but heavy striking surface, such as a knobkerry, hoe handle or motor car file.

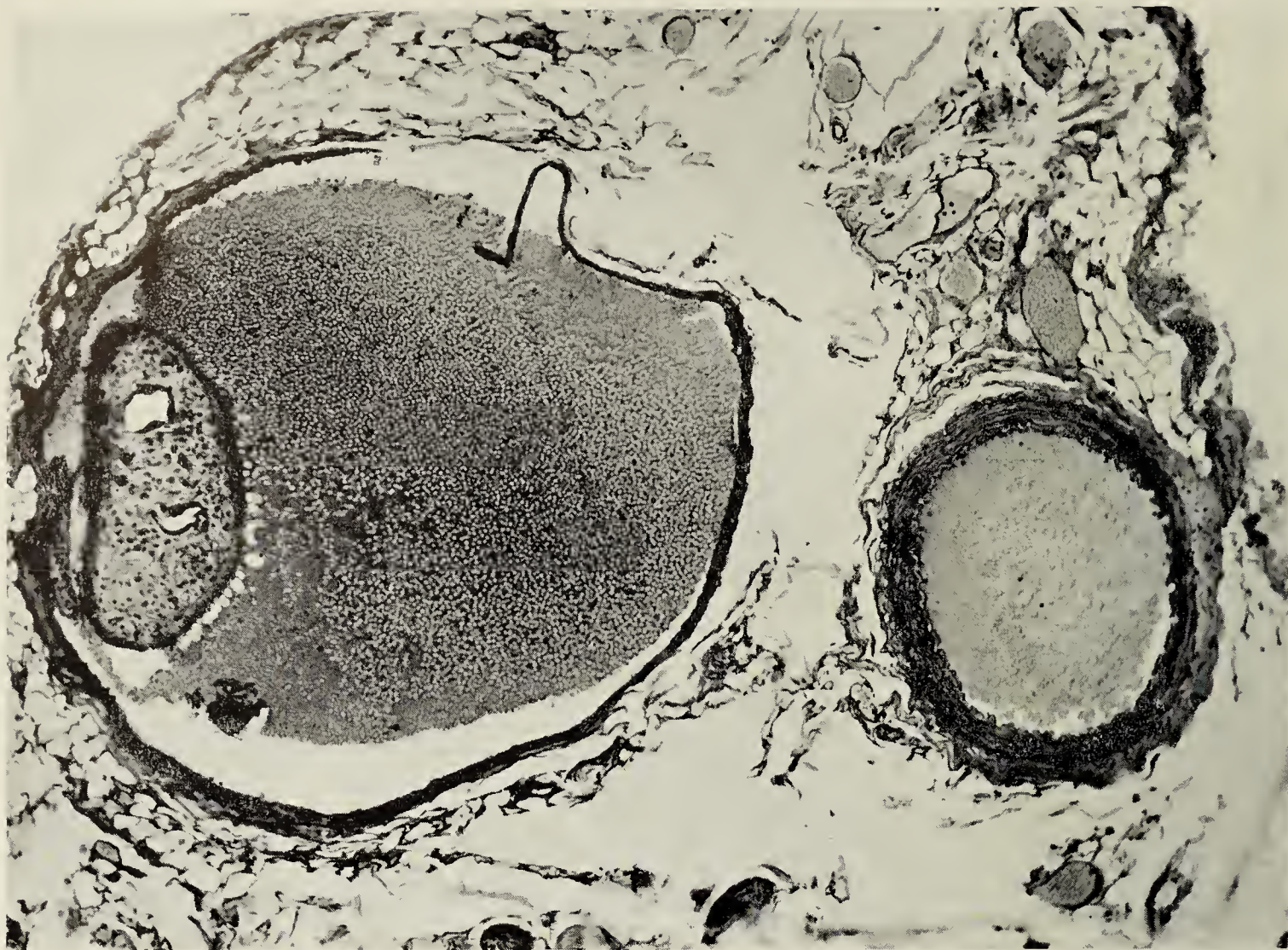
(c) *Shock.* 8 per cent. of the deaths were due to shock, the assault in each case being as follows:—

- (1) Severe battering with fists of a woman 5 months pregnant.
- (2) Severe injuries to genitalia of a female child.
- (3) Sudden fright. Subject a very old man.
- (4) Sudden immersion in the water of a fast flowing stream when under the influence of alcohol.

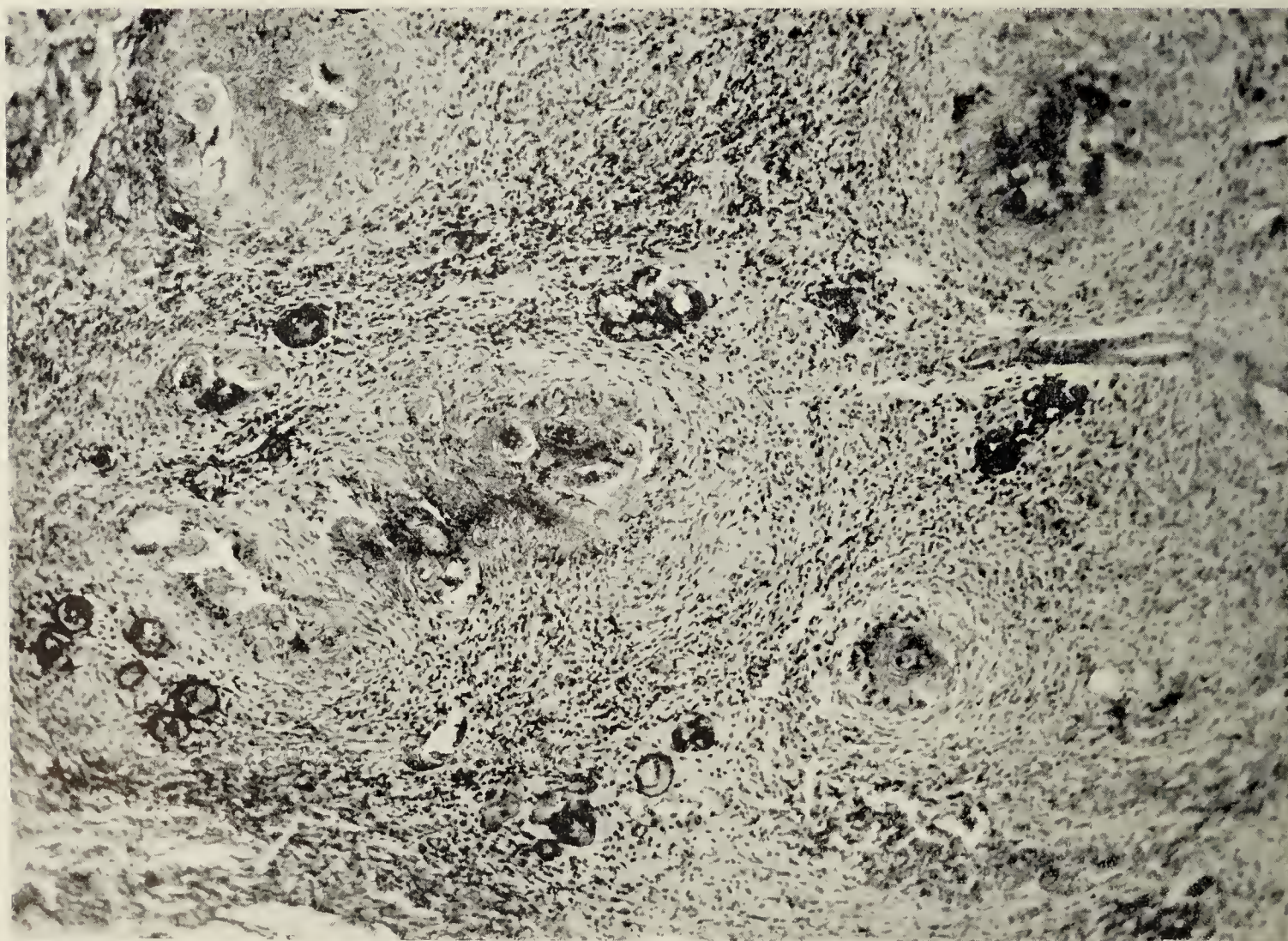
(d) *Ruptured spleen.* One death from this cause occurred in an adult native female following a blow on the abdomen with a fist.

(f) *Poisoning.* 14 per cent. of the deaths were due to poisoning. The poisons used were as follows:—

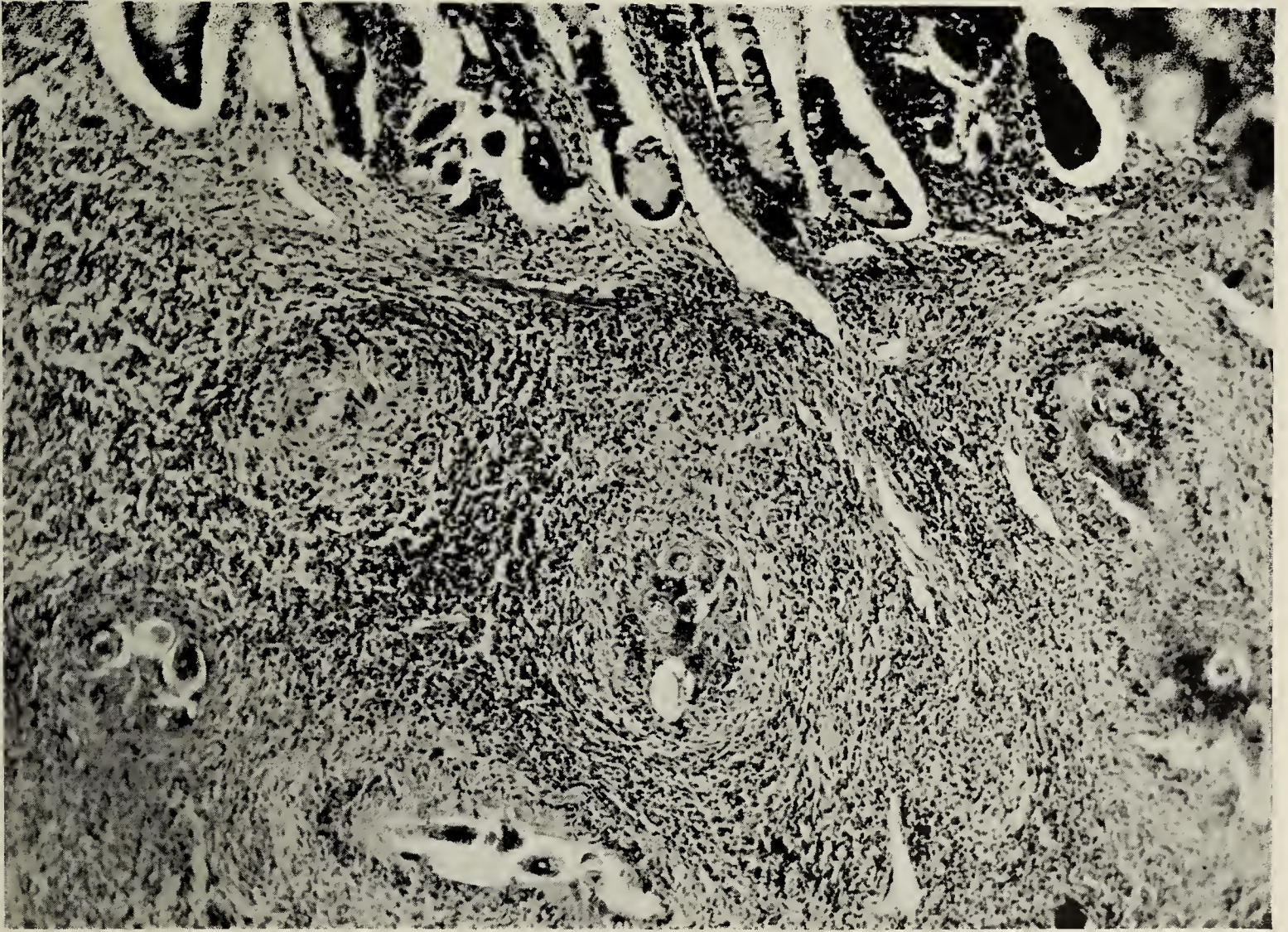
Mylabris bihumerosa	...	1.
Antimony	...	1.
Erythropleine	...	2.
Veronal	...	1.
Strophanthin	...	2.



I.—Adult Schistosome in Branch of Appendicular Vein x 500.



II.—"Schistosome Islets." Note calcified ova. x 500.



III.—“Schistosome Islets.”

Note presence of ova in lumen of viscus. x 500.

Section 7. Training in Laboratory work.

Three dispensers were trained in laboratory work during the year.

Modification of the existing syllabus has not been necessary as the trainees have apparently satisfied the demands made upon them.

Section 8. Miscellaneous Investigations.

Schistosomiasis of the Vermiform Appendix in Africans.

Attention was previously drawn to this condition in the Laboratory Report for the year 1934 (p. 59. Section 8), and since that time a systematic investigation has been made to ascertain whether or not the schistosome ova cause true clinical appendicitis, and in this connection the indebtedness of the writer is due to Drs. Howat, Cronyn, and Blackaby for the supply of material, and for information concerning the clinical signs and symptoms exhibited by the patients.

Over 34 appendices removed from adult Africans, either at operation or autopsy, were examined both macro- and microscopically with the undermentioned results:—

(1) *Species of Schistosome concerned.* In all cases the terminal spined ova of *Bilharzia haematobium* were observed, and in one case adult worms were found within the lumen of a small branch of the appendicular vein. The fact that *B. haematobium* has been proved to infest the intestinal wall with comparative frequency is of much interest.

(2) *Nature of the clinical signs and symptoms.* Most cases were classified as suffering from sub-acute appendicitis, and the detailed signs and symptoms were indistinguishable from those which occur in the usual form of the disease. In a few cases ova of the helminth were found *in situ*, in the appendices of subjects who had died from other conditions such as pneumonia, but the fact is now apparent that any person infested by the worm is liable to suffer appendicitis, either in its acute or chronic form.

(3) *Mechanism by virtue of which disease is produced.*

(a) *Acute.* Adult schistosomes occupy the small mesenteric, and intramural branches of the appendicular vein. If the infestation is heavy the blood return is obstructed, resulting in bogging and oedema of the appendix, and now one of two things may occur, either the offending schistosomes are moved to a wider portion of the venous channel by the vigorous peristaltic movements set up in the wall of the viscus, with the result that symptoms rapidly abate, or owing to the swelling and oedema originally produced by the venous obstruction, the arterial supply is encroached upon and diminished, with the result that partial devitalization of tissue occurs rendering an opening for secondary microbic invasion, and the production of acute symptoms.

(b) *Chronic.* In this condition the ova reach the submucosa, which a certain number penetrate to reach the lumen of the viscus. Ova remaining in the submucosa tend to aggregate into islets forming a "schistosome system," consisting of a central area containing either one or more ova, with an occasional giant cell, and outside this a zone of whorled fibrous tissue. Infiltration with round cells, plasma cells, eosinophil cells and polymorphs occurs with patchy distribution particularly marked in the vicinity of the "systems." Numerous small fibrous areas indicate the remains of old "systems." The muscular and subserous coats are thickened and infiltrated by round cells.

The accompanying microphotos illustrate the appearances described.

Returns.

TABLE I. STAFF.

EUROPEAN.

A. D. J. B. Williams, O.B.E.,...	...	Director of Medical Services.
H. H. B. Follit	...	Senior Health Officer.
W. A. S. Lamborn, O.B.E.,	...	Medical Entomologist.
R. Calleja	...	Senior Medical Officer.
H. M. Shelley	...	Pathologist.
H. G. FitzMaurice	...	Medical Officer.
T. A. Austin	...	" "
W. H. Watson	...	" "
W. L. Gopsill	...	" "
F. O. W. A. Mahon-Daly	...	" "
L. C. Mayne	...	" "
P. J. Bourke	...	" "
R. N. Wilcox	...	" "
E. J. Blackaby	...	" "
H. D. Cronyn	...	" "
D. P. Turner	...	" (Returned from secondment to Somali-land Protectorate 18th Sept., 1936).
J. H. Howat	...	" "
A. Newsom	...	" (Transferred to Northern Rhodesia 11th Sept., 1936).
W. T. C. Berry	...	" (Appointed 24th Jan., 1936).
A. T. D. Whitfield	...	" (Appointed 6th July, 1936).
Miss K. R. Cameron, M.B.E.,	...	Matron. (Retired from service 31st Aug., 1936).
Miss N. M. Cremen, M.B.E.,	...	Nursing Sister.
Miss H. M. Phillips	...	" "
Mrs. N. K. Clemence	...	" "
Miss M. E. S. Cumming	...	" "
Miss H. C. Potter	...	" "
Miss S. Johnson	...	" (Transferred to Northern Rhodesia 16th June, 1936).
Miss B. Wells	...	" "
Miss E. F. McConachy	...	" (Resigned 27th Nov., 1936).
Miss R. P. Harrison	...	" "
Miss E. M. R. D. Davies	...	Nursing Sister.
Miss E. Irvine	...	" (Appointed 25. 9. 1936).
Miss M. Gibson	...	" (" 23. 10. 1926).
Miss S. Barber	...	" (" 18. 12. 1936).
R. W. G. Pegg	...	Clerk and Medical Storekeeper.
V. T. Smithyman	...	Junior Clerk (Temporary).
W. A. Willox	...	Sanitary Superintendent.
F. E. Weaver	...	" (Transferred to Uganda 23. 1. 1936).
F. L. Chapman	...	" (Temporary).

ASIATIC.

B. T. Lele	...	Civil Sub-Assistant Surgeon.
Lakhpat Singh	...	" " " "
S. S. Kokari	...	" " " "
G. K. Joshi	...	" " " "
P. D. Jhala	...	" " " (Appointment terminated 30. 4. 1936).
G. D. Kashap	...	Subadar. I.M.D., Sub-Assistant Surgeon.
B. Prasad	...	Jemadar " " " "
Bansi Lal	...	" " " "
Lachhman Das	...	" " " (Appointed 8. 1. 1936).
Sohan Singh Pannum	...	" " " (Appointed 4. 3. 1936).

AFRICAN

*Leonard Makolera	...	...	...	Hospital Assistant.
Moses Kaundey	...	...	...	" "
*Godwin Maulidi	...	...	...	" "
Elliott Taumbe	...	...	...	" "
Dyson David	...	...	...	" "
*Fred Nyirenda	...	...	...	" "
E. G. Hoare	...	...	...	" "
Harry M. Thomson	...	...	...	" "
Radford Botha	...	...	...	" "
Dan S. Ngurube	...	...	...	" , (Appointed 1. 1. 1936).
J. H. T. Chirwa	...	...	...	Junior Hospital Assistant (Appointed 1. 1. 1936).
J. B. Wachepa	...	...	...	" " " (").
G. Ndovi	...	...	...	" " " (").
R. C. Undi	...	...	...	" " " (").
G. Nyirenda	...	...	...	" " " ("). (Died 19. 11. 1936).
Hudson B. Chamba	...	...	...	Clerk First Grade.
Isaiah M. Jere	...	...	...	" " "
E. E. Mothello	...	...	...	" " "
James F. Sangala	...	...	...	" " " (Appointed 1. 4. 1936).
MacAulsin Chemboga	...	...	...	Sanitary Inspector, First Grade.

* Passed examination for Senior Hospital Assistant.

TABLE II.—FINANCIAL.

(See Section I. C.).

TABLE III.

RETURN OF STATISTICS OF POPULATION FOR THE YEAR 1936.

		European and Whites		Africans		Asiatics
Number of Inhabitants 1936	...	1,838	...	1,619,530	...	1,558
Number of Births 1936	...	35	..	Not known	...	71
Number of Deaths 1936	...	18	...	Not known	...	18
Number of Immigrants 1936	...	—	...	—	...	—
Number of Inhabitants 1935	...	1,781	...	1,600,076	...	1,400
Increase of population	...	57	...	19,554	...	158
Decrease of population	...	—	...	—	...	—

TABLE IV.

TABLE IVa.—ZOMBA AND BLANTYRE EUROPEAN HOSPITALS.
RETURN OF DISEASES AND DEATHS (EUROPEAN IN-PATIENTS) FOR THE YEAR 1936

Diseases.	Remain- ing at the end of 1935	Admissions during 1936.		Total Cases Treated.	Deaths.	Remain- ing at the end of 1936
		Zomba.	Blantyre.			
I. Epidemic, Endemic and Infectious Diseases :						
1. Enteric group :—						
(a) Typhoid fever	—	1	—	1	—	—
(b) Paratyphod A.	—	1	—	1	—	—
(d) Type not defined	—	1	—	1	—	—
2. Typhus	1	—	—	1	—	—
5. Malaria :—						
(a) Tertian (benign)	—	—	3	3	—	1
(c) Aestivo-autumnal (Subtertian malignant)	—	6	1	7	—	—
(d) Cachexia (Chronic)	—	—	1	1	—	—
(e) Blackwater	—	—	3	3	2	—
(f) Undefined	—	4	8	12	—	—
11. Influenza	—	3	—	3	—	—
16. Dysentery :—						
(a) Amoebic	1	18	7	26	—	2
(b) Bacillary	—	2	1	3	—	—
36. Tuberculosis of other organs :—						
(c) Genito-urinary	—	1	—	1	—	—
41. Septicaemia-blood poisoning	1	—	—	1	—	—
II. General Diseases not mentioned above :						
44. Cancer or other malignant tumours of the stomach or liver	—	—	1	1	—	—
58. Anaemia :—						
(b) Other Anaemia and chlorosis	—	—	1	1	—	—
65. Leukaemia :—						
(a) Leukaemia	—	—	1	1	—	—
III. Affections of the Nervous System, and Organs of the Senses :						
74. Apoplexy :—						
(b) Embolism	—	—	1	1	—	—
(c) Thrombosis	—	—	1	1	—	—
77. Other forms of Mental alienation—						
Dementia melancholia	—	—	1	1	—	—
Delusional insanity	—	1	—	1	—	—
82.C. Neurasthenia	—	—	3	3	—	—
H. Sciatica	—	1	—	1	—	—
IV. Affections of the Circulatory System :						
88. Acute endocarditis and Myocarditis	—	—	1	1	—	—
90. Other diseases of the heart :—						
(b) Myocarditis	—	—	1	1	—	—
(c) Disordered action— tachycardia	—	1	—	1	—	—
91. Diseases of the arteries :—						
(b) Arterio-sclerosis	—	1	—	1	—	1
93. Diseases of the veins :—						
Phlebitis	—	1	—	1	—	1
Carried forward	3	42	35	80	2	5

TABLE IVa.—Continued.

* Diseases.	Remain- ing at the end of 1935	Admissions during 1936.		Total Cases Treated.	Deaths.	Remain- ing at the end of 1936
		Zomba.	Blantyre.			
<i>Brought forward</i> ...	3	42	35	80	2	5
<i>V. Affections of the Respiratory System :</i>						
99. Bronchitis :—						
(a) Acute ...	—	—	1	1	—	—
101. Pneumonia :—						
(a) Lobar ...	—	—	1	1	—	—
(b) Unclassified ...	—	1	—	1	—	—
102. Pleurisy .—						
(a) Empyema ...	—	1	1	2	—	—
104. Gangrene of the lungs ...	—	—	1	1	—	—
<i>VI. Diseases of the Digestive System :</i>						
108 A. Diseases of the buccal cavity and annexe :—						
Dental caries ...	—	—	3	3	—	—
109. Affections of the pharynx or tonsils :—						
Sore throat or pharyngitis ...	—	—	1	1	—	—
Vincent's angina ...	—	—	1	1	—	—
Enlargement of tonsils ...	—	1	—	1	—	—
Tonsillitis ...	—	4	1	5	—	—
Other diseases of pharynx or tonsils ...	—	—	1	1	—	—
111 B. Ulcer of the duodenum ...	—	—	1	1	—	—
112. Other affections of the stomach :—						
Gastritis ...	—	—	1	1	—	—
Dyspepsia, etc. ...	—	2	—	2	—	1
114. Diarrhoea and enteritis :—						
Two years and over ...	—	—	2	2	—	—
117. Appendicitis ...	—	4	1	5	—	1
119 B. Other affections of the intestines	—	—	1	1	—	—
Constipation ...	—	1	—	1	—	—
123 Biliary calculus ...	—	—	1	1	—	—
124 Other affections of the liver :—						
Hepatitis ...	—	2	—	2	—	1
Jaundice ...	—	—	1	1	—	—
Hypertrophy ...	—	—	1	1	—	—
127. Other affections of the digestive system ...	—	—	1	1	—	—
<i>VII. Diseases of the Genito-urinary System (non-venereal) :</i>						
129. Chronic nephritis ...	—	1	—	1	—	—
131. Other affections of the kidneys :—						
Pyelitis ...	—	—	4	4	—	—
132. Urinary calculus ...	—	3	—	3	—	—
136. Diseases (non-venereal) of the genital organs of man :—						
Hydrocele ...	—	1	—	1	—	—
138. Salpingitis :—						
Abscess of the pelvis ...	—	—	1	1	—	—
141. A. Metritis ...	—	1	—	1	—	—
B. Other affections of the female genital organs :—						
Menorrhagia ...	—	—	1	1	—	—
<i>VIII. Puerperal State :</i>						
143. A. Normal labour ...	—	6	8	14	—	—
<i>Carried forward</i> ...	3	70	70	143	2	8

TABLE IVa.—Continued.

Diseases.	Remain- ing at the end of 1935	Admissions during 1936.		Total Cases Treated.	Deaths.	Remain- ing at the end of 1936
		Zomba	Blantyre			
<i>Brought forward</i>	3	70	70	143	2	8
B. Accidents of pregnancy :—						
(a) Abortion ...	—	—	2	2	—	—
(c) Vomiting ...	—	1	1	2	—	—
(e) Other accidents of pregnancy	—	1	—	1	—	—
Other diseases ...	—	—	1	1	—	—
IX. <i>Affections of the Skin and Cellular Tissues :</i>						
152. Carbuncle ...	—	—	1	1	—	—
153. Abscess :—						
Cellulitis ...	1	4	1	6	—	—
155. Other diseases of the skin :—						
Other diseases (Ulcer) ...	—	—	1	1	—	—
XIV. <i>Affections Produced by External Causes :</i>						
178. Burns (by fire) ...	—	1	—	1	—	—
179. Burns (other than by fire) ...	—	—	1	1	—	—
201.C. Fracture ...	—	1	—	1	—	1
202. Other external injuries :—						
Concussion ...	—	—	2	2	1	—
XV. <i>Ill-defined Diseases :</i>						
205 A.—Diseases not already specified or ill-defined :—						
Shock ...	—	—	1	1	—	1
Pyrexia of uncertain origin	—	1	—	1	—	—
B. Malingering ...	—	—	1	1	—	—
Total ...	4	79	82	165	3	10

TABLE IV.

TABLE IVb. RETURN OF DISEASES AND DEATHS (NATIVE IN-PATIENTS) FOR THE YEAR 1936.

(INCLUDING ASIATICS, NATIVE OFFICIALS, K. A. R. NATIVE RANKS, NATIVE GENERAL POPULATION, ASIATIC AND NATIVE CONVICTS).

Diseases.	Remain- ing at the end of 1935	Admis- sions during 1936	Total Cases Treated	Deaths.	Remain- ing at the end of 1936.
I. <i>Epidemic, Endemic and Infectious Diseases</i> :					
1. Enteric Group :—					
(a) Typhoid fever ...	2	1	3	1	—
(d) Type not defined ...	1	2	3	—	—
3. Relapsing fever ...	6	120	126	1	5
4. Undulant fever ...	—	6	6	—	—
5. Malaria :—					
(a) Tertian (benign) ...	—	32	32	—	—
(b) Quartan ...	—	29	29	—	—
(c) Aestivo-autumnal (Sub-tertian, malignant) ...	5	351	356	10	10
(d) Cachexia (Chronic) ...	1	25	26	—	—
(e) Blackwater ...	—	3	3	1	—
(f) Undefined ...	23	330	353	1	7
6. Smallpox ...	—	3	3	—	1
Alastrim ...	—	3	3	—	—
7. Measles ...	3	53	56	2	3
9. Whooping cough (pertussis) ...	2	33	35	4	1
10. Diphtheria ...	—	1	1	1	—
11. Influenza ...	2	146	148	1	1
13. Mumps ...	—	4	4	—	—
15. Epidemic diarrhoea ...	—	4	4	—	—
16. Dysentery :—					
(a) Amoebic ...	2	117	119	10	3
(b) Bacillary ...	—	24	24	—	—
(c) Undefined or due to other causes ...	—	10	10	1	—
20. Leprosy ...	11	35	46	2	4
21. Erysipelas ...	—	3	3	1	—
22. Acute poliomyelitis ...	—	2	2	—	—
23. Encephalitis lethargica (sleepy sickness) ...	—	1	1	—	—
24. Epidemic cerebro-spinal fever ...	—	8	8	4	—
25. Other epidemic diseases :—					
(a) Rubeola (German measles) ...	3	21	24	—	1
(b) Varicella (chicken-pox) ...	3	22	25	—	—
(f) Epidemic dropsy ...	—	25	25	—	1
(g) Yaws ...	11	231	242	—	5
(h) Trypanosomiasis ...	2	6	8	—	—
29. Tetanus (lock jaw) ...	—	1	1	1	—
30. Mycosis ...	—	3	3	1	—
31. Tuberculosis, pulmonary and laryngeal ...	5	83	88	11	6
33. Tuberculosis of the intestines or peritoneum ...	—	6	6	1	1
34. Tuberculosis of the vertebral column ...	—	22	22	—	1
35. Tuberculosis of the bones and joints ...	2	16	18	1	3
36. Tuberculosis of other organs ...	—	1	1	—	—
(a) Skin or subcutaneous tissue (Lupus) ...	1	8	9	1	—
(b) Lymphatic system ...	1	15	16	—	3
(c) Genito-urinary ...	—	3	3	1	1
37. Tuberculosis disseminated :—					
(a) Acute ...	—	1	1	1	—
38. Syphilis :—					
(a) Primary ...	42	245	287	—	13
(b) Secondary ...	47	348	395	1	30
(c) Tertiary ...	3	43	46	1	4
(d) Hereditary ...	2	35	37	1	2
(e) Period not indicated ...	—	44	44	—	3
39. Soft chancre ...	—	3	3	—	—
40. A. Gonorrhoea and its complications ...	17	204	221	—	9
B. Gonorrhoeal ophthalmia ...	—	4	4	—	—
C. „ arthritis ...	2	3	5	—	—
41. Septicaemia—Blood poisoning ...	—	6	6	1	1
Gas gangrene ...	—	2	2	2	—
Carried forward	199	2,747	2,946	64	119

TABLE IVb.—Continued.

Diseases.	Remain- ing at the end of 1935	Admis- sions during 1936.	Total Cases Treated	Deaths	Remain- ing at the end of 1936.
<i>Brought forward</i>	199	2,747	2,946	64	119
42. Other infectious diseases :—Filariasis ...	—	1	1	1	—
<i>II. General Diseases not mentioned above :</i>					
43. Cancer or other malignant tumours of the buccal cavity ...	—	2	2	—	1
44. Cancer or other malignant tumours of the stomach or liver ...	—	1	1	—	—
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum ...	—	2	2	1	—
46. Cancer or other malignant tumours of the female genital organs ...	1	—	1	—	—
48. Cancer or other malignant tumours of the skin ...	3	10	13	1	1
49. Cancer or other malignant tumours of organs not specified ...	—	12	12	3	1
50. Tumours (non-malignant) :—					
Adenoma ...	1	18	19	—	—
Angiona ...	—	2	2	—	—
Cyst ...	1	14	15	—	1
Dermoid cyst ...	—	5	5	—	—
Molluscum contagiosum ...	—	1	1	—	—
Osteoma ...	—	4	4	—	—
Papilloma ...	—	3	3	—	—
Sebaceous cyst ...	—	4	4	—	—
51. Acute rheumatism ...	1	4	5	1	—
52. Chronic rheumatism :—					
Arthritis ...	—	17	17	—	—
Rheumatic arthritis ...	—	8	8	—	1
Gout ...	—	1	1	—	—
54. Pellagra ...	4	29	33	—	4
56. Rickets ...	—	1	1	—	—
57. Diabetes (not including insipidus) ...	—	3	3	—	—
58. Anaemia :—					
(a) Pernicious ...	—	2	2	—	—
(b) Other anaemias and chlorosis ...	—	7	7	—	1
60. Diseases of the thyroid gland ...	—	1	1	—	—
(b) Other diseases of the thyroid gland ...	—	4	4	—	1
64. Splenitis ...	1	11	12	—	—
Other diseases of spleen ...	—	1	1	—	—
65. Leukaemia :—					
(b) Hodgkin's disease ...	—	1	1	—	—
66. Alcoholism ...	—	1	1	—	—
<i>III. Affections of the Nervous System and Organs of the Senses :</i>					
70. Encephalitis (not including encephalitis lethargica) ...	—	1	1	—	1
71. Meningitis (not including tuberculous or cerebro-spinal meningitis) ...	—	3	3	3	—
72. Locomotor ataxia ...	—	3	3	1	—
73. Other diseases of the spinal cord :—					
Spastic paraplegia ...	—	3	3	—	—
74. Apoplexy :—					
(a) Haemorrhage ...	—	1	1	—	—
75. Paralysis :—					
(a) Hemiplegias ...	2	10	12	2	1
(b) Other paralyses ...	1	8	9	—	2
76. General paralysis of the insane ...	—	1	1	—	—
77. Other forms of mental alienation :—					
Dementia ...	—	1	1	—	—
Mania ...	—	3	3	—	1
Delusional insanity ...	—	5	5	—	—
Other mental diseases ...	2	13	15	—	1
<i>Carried forward</i>	216	2,969	3,185	77	136

TABLE IVb—Continued.

Diseases.		Remain- ing at the end of 1935	Admis- sions during 1936.	Total Cases Treated	Deaths.	Remain- ing at the end of 1936
<i>Brought forward</i>		216	2,969	3,185	77	136
78. Epilepsy	...	4	53	57	1	4
80. Infantile convulsions	...	—	1	1	—	—
82. A. Hysteria	...	—	1	1	—	—
B. Neuritis	...	—	1	1	—	1
C. Neurasthenia	...	—	4	4	—	—
F. Migraine	...	—	2	2	—	—
G. Neuralgia	...	—	11	11	—	—
H. Sciatica	...	—	8	8	—	—
84. Other affections of the nervons system, such as paralysis agitans	...	—	2	2	—	1
85. Diseases of the eye and annexa:—						
Blepharitis	...	—	6	6	—	—
Cataract	...	5	14	19	—	1
Chalzion	...	—	1	1	—	—
Conjunctivitis	...	8	200	208	—	5
Foreign body	...	—	5	5	—	—
Glaucoma	...	1	1	2	—	—
Optic neuritis	...	—	3	3	—	—
Ulcer of cornea	...	1	36	37	—	1
Other diseases	...	2	47	49	—	5
86. Affections of the ear and mastoid sinus:—						
Mastoiditis	...	—	6	6	—	1
Otorrhœa	...	—	7	7	—	—
Otitis	...	—	23	23	—	—
Perforation of tympanum	...	—	1	1	—	—
Other diseases	...	—	2	2	—	—
IV. Affections of the Circulatory System :						
87. Pericarditis	...	—	2	2	1	2
88. Acute endocarditis and myocarditis	...	—	5	5	1	—
90. Other diseases of the heart:—						
(a) Valvular-mitral	...	—	15	15	3	2
(b) Myocarditis	...	1	9	10	3	—
(c) Disordered action of heart-bradycardia	...	—	2	2	1	—
Tachycardia	...	—	8	8	—	1
93. Diseases of the veins:—						
Haemorrhoids	...	1	10	11	—	—
Varicose veins and varicocele	...	—	5	5	—	1
Phlebitis	...	—	1	1	—	—
94. Diseases of the lymphatic system:—						
Lymphangitis	...	1	5	6	—	—
Lymphadenitis, bubo (non-specific)	...	1	22	23	—	1
95. Haemorrhage of undetermined cause:—						
Epistaxis	...	—	2	2	—	—
V. Affections of the Respiratory System :						
97. Diseases of the nasal passages:—						
Polypus	...	—	3	3	—	1
Coryza	...	—	11	11	—	1
Sinusitis	...	—	3	3	—	—
98. Affections of the larynx:—						
Laryngitis	...	—	18	18	1	1
99. Bronchitis:—						
(a) Acute	...	2	81	83	1	8
(b) Chronic	...	—	19	19	—	3
100. Broncho-pneumonia	...	3	55	58	19	—
101. Pneumonia:—						
(a) Lobar	...	—	92	92	18	4
(b) Unclassified	...	—	3	3	—	1
<i>Carried forward</i>		246	3,775	4,021	126	181

TABLE Vb.—Continued.

Diseases.	Remain- ing at the end of 1935	Admis- sions during 1936	Total Cases Treated	Deaths	Remain- ing at the end of 1936.
<i>Brought forward</i>	246	3,775	4,021	126	181
102. Pleurisy :—					
(a) Empyema ...	—	32	32	—	—
105. Asthma ...	—	24	24	—	—
107. Other affections of the respiratory system :—	—	1	1	1	—
Pleurodynia ...	—	4	4	—	—
VI. Diseases of the Digestive System :					
108. A. Diseases of the buccal cavity and annexa :—					
Alveolar abscess ...	—	6	6	—	—
Dental caries ...	—	10	10	—	—
Pyorrhoea alveolaris ...	1	9	10	—	—
108. B. Stomatitis ...	—	26	26	4	—
Glossitis ...	—	4	4	—	—
109. Affections of the pharynx or tonsils :—					
Sore throat or pharyngitis ...	—	5	5	—	—
Vincent's angina ...	—	3	3	2	—
Tonsillitis ...	2	46	48	—	2
Other diseases of pharynx or tonsils ...	—	3	3	—	—
111 A. Ulcer of the Stomach ...	—	1	1	—	—
B. Ulcer of the duodenum ...	—	1	1	1	—
112. Other affections of the stomach :—					
Gastritis ...	—	11	11	—	1
Dyspepsia ...	1	18	19	—	1
Haematemesis ...	—	6	6	3	—
113. Diarrhoea and enteritis :—					
Under two years ...	—	19	19	2	—
114. Diarrhoea and enteritis :—					
Two years and over ...	2	40	42	1	—
Colic ...	1	8	9	—	—
Colitis ...	—	9	9	—	1
115. Ankylostomiasis ...	45	938	983	9	70
116. Diseases due to intestinal parasites :—					
(a) Cestoda-(Taenia) ...	—	9	9	—	—
(b) Nematoda (other than ankylostoma) :—					
Ascaris ...	1	45	46	—	1
Trichina ...	—	1	1	—	—
Strongylus ...	—	5	5	—	1
Oxyuris ...	—	1	1	—	—
117. Appendicitis ...	—	8	8	—	—
118. Hernia :—					
(a) Femoral ...	—	1	1	—	—
(b) Inguinal ...	5	33	38	2	5
(c) Umbilical ...	—	4	4	1	—
(d) Strangulated ...	—	4	4	1	—
119. A. Affections of the anus, fistula, etc. :—					
Faecal fistula ...	1	3	4	—	—
Fissure of anus ...	—	1	1	—	1
Prolapse of anus ...	—	6	6	—	2
B. Other affections of the intestines :—					
Constipation ...	2	45	47	—	1
Other diseases ...	—	5	5	—	—
121. Hydatid of liver ...	—	1	1	—	—
122. Cirrhosis of the liver :—					
(a) Alcoholic ...	—	1	1	—	1
(b) Other forms ...	—	1	1	—	—
124. Other affections of the liver :—					
Absces ...	—	3	3	—	—
Hepatitis ...	—	5	5	—	—
Cholecystitis ...	—	2	2	—	1
Jaundice ...	—	10	10	1	—
<i>Carried forward</i>	307	5,209	5,516	156	269

TABLE IVb.—Continued.

Diseases.	Remain- ing at the end of 1935	Admis- sions during 1936.	Total Cases Treated.	Deaths.	Remain- ing at the end of 1936
<i>Brought forward</i>	307	5,209	5,516	156	269
VII <i>Diseases of the Genito-urinary System (non-venereal) :</i>					
128. Acute nephritis ...	—	13	13	2	—
129. Chronic nephritis ...	—	9	9	—	1
130. B. Schistosomiasis ...	22	476	498	9	24
131. Other affections of the kidneys :—					
Pyelitis ...	2	10	12	—	—
Haematuria (non-Bilharzial) ...	1	3	4	—	—
132. Urinary calculus ...	—	2	2	—	—
Renal calculus ...	—	1	1	—	—
133. Diseases of the bladder :—					
Cystitis ...	—	17	17	1	—
Incontinence of urine ...	—	2	2	—	1
Retention of urine ...	—	8	8	1	—
Rupture of bladder ...	—	1	1	—	—
134. Diseases of the urethra :—					
Stricture ...	1	1	2	—	—
Other diseases ...	—	3	3	—	—
135. Diseases of the prostate :—					
Hypertrophy ...	—	1	1	—	—
136. Diseases (non-Venereal) of the genital organs of Man :—					
Epididymitis ...	2	9	11	—	—
Orchitis ...	1	5	6	—	—
Hydrocele ...	5	39	44	—	5
Phimosis ...	—	5	5	—	1
Para-phimosis ...	—	11	11	—	—
137. Cyst or other non-malignant tumours of the ovaries	1	2	3	—	—
138. Salpingitis :—					
Absces of the pelvis ...	—	9	9	—	1
139. Uterine tumours (non-malignant) :—					
Fibroid ...	—	3	3	—	1
141. A. Metritis ...	—	6	6	—	—
B. Other affections of the female genital organs :	—	3	3	—	1
Amenorrhoea ...	—	3	3	—	—
Leucorrhoea ...	—	4	4	—	—
Ovaritis ...	—	2	2	—	—
Menorrhagia ...	—	3	3	—	—
Prolapse ...	—	1	1	—	—
Vaginitis ...	—	1	1	—	—
Vulvitis ...	—	1	1	—	—
142. Diseases of the Breast (non-puerperal) :—					
Mastitis ...	—	6	6	—	—
Abscess of the breast ...	—	17	17	—	—
Other diseases of the breast ...	—	2	2	—	—
VIII. <i>Puerperal State :</i>					
143. A. Normal labour ...	2	26	28	—	—
Delayed labour ...	—	43	43	10	3
B. Accidents of pregnancy :—					
(a) Abortion ...	—	10	10	1	—
(b) Actopis gestation ...	—	1	1	—	—
(d) Ante-partum haemorrhage ...	—	1	1	—	—
(c) Other accidents of pregnancy ...	—	2	2	—	—
144. Puerperal haemorrhage ...	—	1	1	—	—
Retained placenta ...	—	11	11	2	—
145. Other accidents of parturition ...	—	5	5	1	—
146. Puerperal septicaemia ...	—	4	4	2	—
150. Puerperal affections of the breast ...	—	1	1	—	—
<i>Carried forward</i>	344	5,995	6,339	185	307

TABLE IVb.—Continued.

Diseases	Remain- ing at the end of 1935	Admis- sions during 1936	Total Cases Treated	Deaths	Remaining at the end of 1936
<i>Brought forward</i>	344	5,995	6,339	185	307
<i>IX. Affections of the Skin and Cellular Tissues :</i>					
151. Gangrene ...	—	15	15	3	—
152. Boil ...	1	36	37	—	—
Carbuncle ...	—	7	7	—	—
153. Abscess—					
Whitlow ...	13	92	105	—	7
Cellulitis ...	6	98	104	—	2
154.A. Tinea ...	—	3	3	—	1
B. Scabies ...	26	259	285	—	7
155. Other diseases of the skin :—					
Erythema ...	—	3	3	—	—
Urticaria ...	—	1	1	—	—
Eczema ...	2	36	38	—	2
Herpes ...	—	21	21	—	—
Psoriasis ...	—	5	5	—	1
Prickly heat ...	—	1	1	—	—
Elephantiasis ...	—	17	17	—	3
Chiggers ...	—	47	47	—	—
Dermatitis ...	1	29	30	—	3
Impetigo ...	2	29	31	—	—
" Contagiosa ...	—	7	7	—	—
Pediculosis ...	—	1	1	—	—
Seborrhoea ...	—	1	1	—	—
Wart ...	—	15	15	—	—
Others ...	62	960	1022	10	56
<i>X. Diseases of Bones and Organs of Locomotion (other than Tuberculous) :</i>					
156. Diseases of the bones :—					
Osteitis ...	—	6	6	—	—
Periostitis ...	—	9	9	—	1
Osteomyelitis ...	5	15	20	4	5
157. Diseases of the joints :—					
Arthritis ...	—	27	27	—	6
Synovitis ...	—	35	35	—	1
158. Other diseases of bones or organs of locomotion :—					
Bursitis ...	—	1	1	—	—
Ganglion ...	—	3	3	—	—
Lumbago ...	—	3	3	—	—
Lumbago ...	1	33	34	—	1
Myalgia ...	2	96	98	—	—
Tenosynovitis ...	—	3	3	—	—
Other diseases ...	—	14	14	—	3
<i>XI. Malformations :</i>					
159. Malformation :—					
Spina-bifida ...	—	1	1	—	—
Other diseases ...	—	1	1	1	—
<i>XII. Diseases of Infancy :</i>					
160. Congenital debility ...	—	4	4	1	—
<i>XIII. Affections of Old Age :</i>					
164. Senility :—					
Senile dementia ...	—	4	4	2	—
<i>Carried forward</i>	465	7,933	8,398	206	406

TABLE IVb.—Continued.

Diseases	Remain- ing at the end of 1935	Admis- sions during 1936	Total Cases Treated	Deaths	Remain- ing at the end of 1936
<i>Brought forward</i>	465	7,933	8,398	206	406
XIV. Affections produced by External Causes :					
171. Suicide by cutting or stabbing instruments ...	—	3	3	3	—
175. Food poisoning ...	—	1	1	—	—
176. Attacks of poisonous animals :—					
Snake-bite ...	—	33	33	—	2
Insect-bite ...	—	6	6	—	1
177. Other accidental poisonings ...	—	1	1	—	—
178. Burns (by fire) ...	8	164	172	13	15
179. Burns (other than by fire) ...	—	8	8	—	—
180. Suffocation (accidental) ...	—	1	1	—	—
183. Wounds (by firearms, war excepted) ..	1	3	4	—	—
184. Wounds (by cutting or stabbing instruments) ...	8	282	290	5	10
185. Wounds (by fall) ...	16	211	227	1	5
186. Wounds (in mines or quarries) ...	—	1	1	—	—
187. Wounds (by machinery) ...	—	12	12	—	—
188. Wounds (crushing, <i>e.g.</i> , rail-accident etc.,) ...	—	7	7	—	1
189. Injuries inflicted by animals, (bites, kicks, etc.)	8	67	75	4	2
192.B. Hunger or thirst ...	—	6	6	3	—
195. Lightning stroke ...	5	1	6	—	—
201.A. Dislocation ...	1	20	21	—	1
B. Sprain ...	1	33	34	—	1
C. Fracture ...	10	109	119	3	12
202. Other external injuries :—					
Concussion ...	—	47	47	—	1
Bruises ...	2	61	63	—	2
Foreign body (except eye) ...	—	6	6	—	—
Abrasions ...	2	45	47	—	1
Unclassified ...	1	—	1	—	—
XV. Ill-Defined Diseases :					
205. A. Diseases not already specified or ill-defined :—					
Ascites ...	3	28	31	5	4
Oedema ...	—	5	5	1	—
Asthenia or debility ...	2	76	78	5	2
Shock ...	—	1	1	—	—
Headache ...	—	7	7	—	—
Pyrexia of uncertain origin ...	—	5	5	1	—
N.Y.D. ...	4	18	22	—	2
B. Malingering ...	—	5	5	—	—
Other diseases ...	—	14	14	—	—
TOTAL ...	537	9,220	9,757	250	468

TABLE V.

TABLE Va.—RETURN OF DISEASES (EUROPFAN OUT-PATIENTS) FOR THE YEAR 1936.

Diseases.				M.	F.	Diseases				M.	F.		
I. Epidemic, Endemic and Infectious Diseases :						Brought forward						230	170
1. Enteric group :—						78. Epilepsy						—	1
Typhoid fever						82A. Hysteria						—	5
Paratyphoid A						B. Neuritis						4	2
Type not defined						C. Neurasthenia						2	14
3. Relapsing fever						D. Hemisrania						—	1
4. Undulant fever						F. Migraine						—	3
5. Malaria :—						G. Neuralgia						—	2
Tertian (benign)						H. Sciatica						6	2
Quartan						85. Diseases of the eye and annexa :—							
Aestivo-autumnal						Conjunctivitis						10	9
(subtertian, malignant)						Foreign body						4	1
Cachexia (chronic)						Stye						1	—
Blackwater						Tumour						1	—
Undefined						Ulcer of cornea						1	1
7. Measles						Other diseases						2	2
9. Whooping cough (pertussis)						86. Affections of the ear and mastoid							
10. Diphtheria						sinus :—							
11. Influenza						Otorrhoea						2	1
15. Epidemic diarrhoea						Otitis						1	2
16. Dysentery :—						Perforation of tympanum						—	1
Amoebic						Other diseases						27	14
Bacillary						IV. Affections of the Circulatory System :							
Undefined or due to other						88. Acute endocarditis and myo-							
causes						carditis						—	1
25. Other epidemic diseases						89. Angina pectoris						—	1
Rubeola (German measles)						90. Other diseases of the heart :—							
Dengue						Valvular-mitral						1	1
31. Tuberculosis, pulmonary and						Myocarditis						2	1
laryngeal						Disordered action of heart—							
36. Tuberculosis of other organs :—						Bradycardia						1	3
Lymphatic system						Tachycardia						5	2
38. Syphilis :—						91. Diseases of the arteries :—							
Secondary						Arterio-sclerosis						3	4
40A. Gonorrhoea and its complica-						92. Embolism or Thrombosis							
tions						(non-cerebral)						1	—
II. General Diseases not mentioned above :						93. Diseases of the veins :—							
44. Cancer or other malignant tumours						Haemorrhoids						9	1
of the stomach or liver						Varicose veins and varicocele						—	1
50. Tumours (non-malignant) :—						Phlebitis						2	—
Cyst						94. Diseases of the lymphatic system :—							
Sebaceous cyst						Lymphangitis						4	—
51. Acute rheumatism						Lymphadenitis, Bubo,							
52. Chronic rheumatism :—						(nonspecific)						3	—
Rheumatism arthritis						95 Haemorrhage of undetermined							
57. Diabetes (not including Insipidus)						cause : —							
58. Anaemia :—						Epistaxis						1	—
Other Anaemias and Chlorosis						Other diseases						1	1
59. Diseases of the thyroid gland :—						V. Affections of the Respiratory System :							
Other diseases of the thyroid						97. Diseases of the nasal passages :—							
gland						Rhinitis						3	1
65. Leukaemia :—						Coryza						64	29
Hodgkin's disease						Sinusitis						5	—
66. Alcoholism						98. Affections of the larynx :—							
69. Other general diseases						Laryngitis						6	2
III. Affections of the Nervous System and						99. Bronchitis :—							
Organs of the Senses :						Acute						26	16
74. Apoplexy :—						Chronic						2	1
Embolism						100. Broncho-pneumonia						1	—
Thrombosis						101. Pneumonia :—							
75. Paralysis :—						Lobar						1	1
Other paralyzes						Unclassified						—	1
77. Other forms of mental alienation :—						102. Pleurisy—Empyema						4	1
Dementia						105. Asthma						4	2
Delusional insanity													
Carried forward						Carried forward						440	301

TABLE Va.—Continued

Diseases	M.	F.	Diseases	M.	F.
<i>Brought forward</i>	440	301	<i>Brought forward</i>	715	483
107. Other affections of the respiratory system :—			136 Diseases (non-venereal of the genital organs of the man—hydrocele	1	—
Hay fever	—	1	137. Cyst or other non-malignant Tumours of the ovaries	—	1
Pleurodynia	2	—	138. Salpingitis—abscess of the Pelvis	—	1
Other diseases	1	—	141A. Metritis	—	2
108 A. Diseases of the buccal cavity and annexa :—			141B. Other affections of the female genital organs :—		
Alveolaris abscess	1	1	Displacements of the uterus	—	1
Dental caries	17	9	Amenorrhoea	—	8
Pyorrhoea—Alveolar	—	1	Dysmenorrhoea	—	20
108 B. Stomatitis	5	—	Leucorrhoea	—	3
Glossitis	2	—	Ovaritis	—	1
109. Affections of the pharynx or tonsils :—			Menorrhagia	—	13
Sore Throat or pharyngitis	14	9	Vulvitis... ..	—	1
Vincent's angina	2	2	142. Diseases of the breast (non-puerperal) :—		
Enlargement of tonsil	—	2	Mastitis	—	1
Tonsillitis	49	38			
Other diseases of pharynx or tonsils	3	—	VIII. <i>Puerperal State :</i>		
111 B. Ulcer of the duodenum	8	1	143.A. Normal labour	—	17
112. Other affections of the stomach :—			B. Accidents of pregnancy :—		
Gastritis	11	6	Abortion	—	5
Dyspepsia, etc.	56	30	Vomiting	—	3
113. Diarrhoea and enteritis :—			Other accidents of pregnancy	—	2
Under two years	4	3	149. Sequelae of labour	—	2
114. Diarrhoea and enteritis :—					
Two years and over	36	36	IX. <i>Affections of the Skin and Cellular Tissues :</i>		
Colic	1	1	152. Boil	14	8
Colitis	2	1	Carbuncle	5	—
115. Ankylostomiasis	1	—	153. Abscess—		
116. Diseases due to intestinal parasites :—			Whitlow	10	1
Oxyuris	2	—	Cellulitis	10	6
117. Appendicitis	3	3	154. A. Tinea	7	1
118. Hernia :			B. Scabies	5	—
Inguinal	3	—	155. Other diseases of the skin :—		
Umbilical	—	2	Erythema	—	2
119. A. Affections of the anus, Fistula etc :—			Urticaria	6	4
Faecal Fistula	1	—	Eczema	9	11
B. Other affections of the intestines	1	—	Herpes	3	1
Constipation	16	7	Psoriasis	2	1
Piles	—	1	Prickly heat	3	—
121 Hydatid of liver	1	—	Myiasis	4	2
122 Cirrhosis of the Liver			Chiggers	2	1
Alcoholic	1	—	Dermatitis	4	5
123 Biliary calculus	1	—	Acne	1	—
124. Other affections of the liver-abscess :—			Impetigo	—	3
Hepatitis	2	3	Seborrhoea	—	3
Cholecystitis	—	2	Wart	1	3
Jaundice	1	—	Other diseases	17	2
Hypertrophy	3	—			
VII. <i>Diseases of the Genito-urinary System (non-venereal) :</i>			X. <i>Diseases of Bones and Organs of Locomotion (non-Tuberculous) :—</i>		
129. Chronic nephritis	1	1	156. Diseases of joints :—		
130.B.Schistosomiasis.	3	—	Arthritis	4	4
131. Other affections of the kidneys :—			Synovitis	4	3
Pyelitis	9	16	158 Other diseases of bones or organs of locomotion :—		
Haematuria (non-bilharzial)	—	1	Bursitis	2	—
132. Urinary calculus	4	—	Ganglion	1	—
Renal calculus	1	1	Lumbago	8	2
133. Diseases of the bladder—cystitis	3	4	Myalgia	16	9
134. Diseases of the urethra—stricture	1	—			
abscess	1	—	XI. <i>Malformations :</i>		
135. Diseases of the Prostate—Prostatitis	2	—	159. Malformations :—		
			Others	—	1
<i>Carried forward</i>	715	483	<i>Carried forward</i>	854	637

TABLE Va.—Continued.

Diseases.			Diseases		
M. F.			M. F.		
<i>Brought forward</i>			<i>Brought forward</i>		
854 637			899 651		
XII. <i>Diseases of Infancy</i> :			201. A. Dislocation	1	—
160. Congenital debility	1	—	B. Sprain	23	3
162. Other affection of infancy	1	3	C. Fracture	11	2
XIV. <i>Affections produced by External Causes</i> :			202. Other external injuries:—		
175. Food poisoning—Ptomaine poisoning	1	—	Concussion	2	—
176. Attacks of poisonous animals:			Bruises	7	4
Insect bite	4	2	Foreign body (except eye)	1	1
177. Other accidental poisonings	—	1	Abrasions	8	5
178. Burns (by fire)	3	—	XV. <i>Ill-Defined diseases</i> :		
179. Burns (other than by fire)	1	3	205 A. Diseases not already specified		
184. Wounds (by cutting or stabbing			or ill-defined:—		
instruments)	3	—	Asthenia or debility	48	17
185. Wounds (by fall)	12	3	Shock	1	—
187. Wounds (by machinery)	2	—	Headache	3	4
189. Injuries inflicted by animals,			Pyrexia of uncertain origin	—	1
(bites, kicks, etc.)	9	2	N.Y.D.	1	
<i>Carried forward</i>			Total	997	688
899 651					

TABLE V.

TABLE Vb. RETURN OF DISEASES (NATIVE OUT-PATIENTS) FOR THE YEAR 1936.
(INCLUDING ASIATICS, NATIVE OFFICIALS, K.A.R. NATIVE RANKS, NATIVE
GENERAL POPULATION, ASIATIC AND NATIVE CONVICTS).

Diseases.	Hospital Out-Patients		Rural Dispensaries.	
	Males	Females	Males	Females
<i>I. Epidemic, Endemic and Infectious Diseases :</i>				
1. Enteric group :—				
(a) Typhoid fever ...	—	1	—	—
3. Relapsing fever ...	154	48	74	35
5. Malaria—				
(a) Tertian (benign) ...	179	122	—	—
(b) Quartan ...	80	55	—	—
(c) Aestivo-autumnal (Sub-tertion, Malignant) ...	599	304	—	—
(d) Cachexia (Chronic) ...	38	25	—	—
(e) Blackwater fever ...	3	—	—	—
(f) Undefined ...	2,816	1,834	6,387	4,386
6. Smallpox ...	120	56	3	4
Alastrim ...	1	—	—	—
7. Measles ...	189	162	436	404
9. Whooping cough (Pertussis) ...	542	570	924	842
10. Diphtheria ...	4	1	—	—
11. Influenza ...	1,065	356	587	386
13. Mumps ...	8	8	—	—
15. Epidemic diarrhoea ...	9	7	—	—
16. Dysentery :—				
(a) Amoebic ...	136	26	—	—
(b) Bacillary ...	28	11	—	—
(c) Undefined or due to other causes ...	81	62	598	423
20. Leprosy ...	84	24	21	10
21. Erysipelas ...	1	3	—	—
22. Acute poliomyelitis ...	2	1	—	—
23. Encephalitis Lethargica (Sleepy Sickness) ...	1	—	—	—
24. Epidemic cerebro-spinal fever ...	5	6	—	—
25. Other epidemic diseases :—				
(a) Rubeola (German Measles) ...	17	4	—	—
(b) Varicella (Chicken-pox) ...	28	22	—	—
(g) Yaws ...	914	454	1,482	1,380
(h) Trypanosomiasis ...	5	1	—	—
27. Anthrax (Malignant Pastules) ...	1	—	—	—
28. Rabies (Hydrophobia) ...	5	1	—	—
30. Myosis ...	—	2	—	—
31. Tuberculosis, pulmonary and laryngeal ...	96	20	—	—
33. Tuberculosis of the intestines or peritoneum ...	1	—	—	—
34. Tuberculosis of the vertebral column ...	26	3	—	—
35. Tuberculosis of bones and joints ...	16	7	—	—
36. Tuberculosis of the organs :—				
(a) Skin or Subcutaneous Tissue (Lupus) ...	8	5	—	—
(b) Lymphatic system ...	25	9	—	—
(c) Genito-urinary system ...	3	—	—	—
(d) Other organs ..	2	1	—	—
37. Tuberculosis—disseminated :—				
(b) Chronic ...	2	—	—	—
(c) Unclassified ...	—	—	15	4
38. Syphilis :—				
(a) Primary ...	381	313	—	—
(b) Secondary ...	355	329	—	—
(c) Tertiary ...	90	103	—	—
(d) Hereditary ...	51	60	—	—
(e) Period not indicated ...	43	41	273	285
39. Soft chancre ...	4	2	—	—
40. A. Gonorrhoea and its complications ...	500	199	105	40
B. Gonorrhoeal ophthalmia ...	8	2	—	—
C. „ „ arthrititis ...	6	1	—	—
41. Septicaemia :—				
Blood Poisoning ...	4	—	—	—
Gas Gangrene ...	2	—	—	—
42. Other infectious diseases ...	3	—	33	22
<i>Carried forward</i>	8,741	5,261	10,938	8,221

TABLE Vb.—Continued.

Diseases.	Hospital Out-Patients		Rural Dispensaries.	
	Males	Females	Males	Females
<i>Brought forward</i>	8,741	5,261	10,938	8,221
II. <i>General Diseases not mentioned above :</i>				
43. Cancer or other malignant tumours of the buccal cavity ...	2	—	—	—
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum ...	2	1	—	—
46. Cancer or other malignant tumours of the female genital organs ...	—	1	—	—
47. Cancer or other malignant tumours of the breast ...	1	—	—	—
48. Cancer or other malignant tumours of skin ...	4	7	—	—
49. Cancer or other malignant tumours of organs not specified ...	11	9	—	—
50. Tumours (non-malignant) ...	17	14	—	1
Tumours malignant ...	—	—	11	2
Adenoma ...	2	—	—	—
Cyst ...	31	10	—	—
Dermoid cyst ...	4	—	—	—
Molluscum contaniosum ...	2	—	—	—
Osteoma ...	2	—	—	—
Papilloma ...	6	6	—	—
Polypus ...	2	—	—	—
Sebaceous cyst ...	9	3	—	—
51. Acute rheumatism ...	179	164	—	—
52. Chronic rheumatism :—				
Arthritis ..	367	107	—	—
Rheumatic arthritis ...	36	14	—	—
Gout ...	1	—	—	—
53. Scurvy (including Barlow's disease) ...	1	1	34	20
54. Pellagra ...	35	9	—	—
56. Rickets ...	—	2	—	—
57. Diabetes (not including insipidus) ...	2	1	—	—
58. Anaemia :—				
(a) Pernicious ...	7	3	—	—
(b) Other anaemias and chlorosis ...	43	24	10	16
59. Diseases of the pituitary body ...	2	—	—	—
60. Diseases of the thyroid gland :—				
(a) Exophthalmic goitre ...	1	2	—	—
(b) Other diseases of the thyroid gland ...	5	5	—	—
64 Diseases of the Spleen :—				
Splentitis ...	22	6	—	—
Other diseases of the spleen ...	5	1	8	7
65. Leukaemia :—				
(b) Hodgkin's disease ...	2	1	—	—
66. Alcoholism ...	2	—	—	—
69. Other general diseases ...	—	—	270	253
III. <i>Affections of the Nervous System and Organs of the Senses :</i>				
70. Encephalitis (not including Encephalitis Lethargica) ...	1	—	—	—
Brain abscess compression ...	1	—	—	—
71. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis)	1	1	—	—
72. Locomotor Ataxia ...	2	—	—	—
73. Other diseases of the spinal cord				
Spastic paraplegia ...	2	1	—	—
74. Apoplexy :—				
(a) Haemorrhage ...	1	—	—	—
75. Paralysis :—				
(a) Hemiplegias ...	20	3	—	—
(b) Other paralyses ...	16	1	—	—
76 General paralysis of the Insane ...	1	—	—	—
<i>Carried forward</i>	9,591	5,658	11,271	8,520

TABLE Vb.—Continued.

Diseases.	Hospital Out-Patients		Rural Dispensaries	
	Males	Females	Males	Females
<i>Brought forward</i> ...	9,591	5,658	11,271	8,520
77. Other forms of the mental alienation :—				
Dementia ...	1	—	—	—
Mania ...	5	—	—	—
Delusional insanity ...	4	1	—	—
Other mental diseases ...	13	4	—	—
78. Epilepsy ...	87	9	—	—
80. Infantile convulsions ...	1	—	—	—
81. Chorea ...	—	1	—	—
82. A—Hysteria ...	1	—	—	—
B—Neuritis ...	9	2	—	—
C—Neurasthenia ...	4	2	—	—
D—Hemicrania ...	3	—	—	—
E—Intercostal neuralgia ...	18	4	—	—
F—Migraine ...	2	—	—	—
G—Neuralgia ...	182	97	—	—
H—Sciatica ...	13	4	—	—
I—Headache ...	491	198	—	—
J—Vertigo ...	1	—	—	—
84. Other affections of the nervous system, such as paralysis, agitans ...	3	—	251	189
85. Diseases of the eye and annexa :—				
Blepharitis ...	20	21	—	—
Cataract ...	17	5	—	—
Chalazion ...	6	—	—	—
Conjunctivitis ...	3,292	3,157	8,196	8,867
Ectropion ...	2	—	—	—
Foreign body ...	42	15	—	—
Glaucoma ...	7	3	—	—
Optic neuritis ...	1	—	—	—
Stye ...	24	6	—	—
Tumour ...	4	4	—	—
Ulcer of cornea ...	99	55	—	—
Other diseases ...	105	58	—	—
86. Affections of the ear and mastoid sinus :—				
Mastoiditis ...	103	82	—	—
Otorrhoea ...	575	372	—	—
Otitis ...	678	440	—	—
Perforation of Tympanum ...	13	4	—	—
Other diseases ...	164	84	4,084	3,160
IV. <i>Affections of the Circulatory System :</i>				
87. Pericarditis ...	4	—	—	—
88. Acute Endocarditis and Myocarditis ...	4	1	—	—
89. Angina pectoris ...	2	2	—	—
90. Other diseases of the heart :—				
(a) Valvular—Mitral ...	29	14	—	—
Aortic ...	1	—	—	—
Pulmonary ...	10	6	—	—
(b) Myocarditis ...	6	—	—	—
(c) Disordered action of Heart :—				
Bradycardia ...	8	1	—	—
Tachycardia ...	19	8	—	—
Disordered action ...	—	—	7	4
93. Diseases of the Veins :—				
Haemorrhoids ...	21	2	—	—
Varicose veins and Varicocele ...	14	—	—	—
Phlebitis ...	5	2	—	—
94. Diseases of the lymphatic system :—				
Lymphangitis ...	26	14	—	—
Lymphadenitis bubo (non-specific) ...	53	9	—	—
95. Haemorrhage of undetermined cause :—				
Epistaxis ...	2	—	—	—
Affections of the circulatory system (Unclassified) ..	—	—	7	6
<i>Carried forward</i>	15,785	10,345	23,816	20,746

TABLE Vb.—Continued.

Diseases.	Hospital		Rural	
	Out-Patients		Dispensaries.	
	Males	Females	Males	Females
<i>Brought forward</i>	15,785	10,345	23,816	20,746
V. Affections of the Respiratory System :				
97. Diseases of the nasal passages :—				
Polypus	3	1	—	—
Rhinitis	9	2	—	—
Coryza	2,687	1,227	6,965	4,731
Sinusitis	5	—	—	—
98. Affections of the larynx :—				
Laryngitis	21	8	—	—
99. Bronchitis :— (a) Acute ..	5,963	3,292	19,893	12,885
(b) Chronic	2,301	1,641		
Bronchial catarrh	124	44		
100. Broncho-pneumonia	46	39	—	—
101. Pneumonia—Lobar	86	26	—	—
Unclassified	3	—	247	196
102. Pleurisy :—	—	—	38	18
Empyema	49	17	—	—
104. Gangrene of the lungs	1	—	—	—
105. Asthma	166	51	243	146
106. Pulmonary emphysema	3	—	—	—
107. Other affections of the respiratory system :—				
Hay fever	2	1	—	—
Pleurodynia	19	6	—	—
VI. Diseases of the Digestive System :				
108. A. Diseases of the buccal cavity and annexa :				
Alveolar abscess	35	12	—	—
Dental caries	1,768	1,351	4,978	4,338
Pyorrhoea alveolar	309	205	—	—
B. Stomatitis	207	141	909	772
Glossitis	11	1	—	—
109. Affections of the pharynx or tonsils :—				
Sore throat on pharyngitis	537	196	—	—
Vincent's angina	3	3	—	—
Enlargement of tonsil	4	—	—	—
Tonsillitis	528	362	—	—
Other diseases of pharyngitis or tonsils	3	1	1,568	996
110. Affections of the oesophagus	—	1	—	—
111. A. Ulcer of the stomach	1	—	—	—
B. Ulcer of the duodenum	1	—	—	—
112. Other affections of the stomach :—				
Gastritis	69	66	3,711	2,341
Dyspepsia etc.	917	316		
Haematemesis	4	1		
113. Diarrhoea and enteritis :—				
Under two years	644	372	5,355	4,053
114. Diarrhoea and enteritis :—				
Two years and over	649	319		
Colic	179	130	—	—
Colitis	141	53	—	—
Ulceration	1	—	—	—
115. Ankylostomiasis	3,973	1,962	3,389	2,455
116. Diseases due to intestinal parasites :—				
Cestoda—Taenia	19	6	—	—
Nematoda (other than ankylostoma) :—				
Ascaris	473	314	—	—
Strongylus	33	12	—	—
Oxyuris	18	7	—	—
Other parasites	2	—	—	—
Unclassified	7	4	—	—
117. Appendicitis	9	3	—	—
<i>Carried forward</i>	37,818	22,538	71,112	53,677

TABLE Vb.—Continued.

Diseases.	Hospital Out-Patients		Rural Dispensaries	
	Males	Females	Males	Females
<i>Brought forward</i>	37,818	22,538	71,112	53,677
118. Hernia :— <i>a)</i> Femoral ...	1	1	—	—
<i>(b)</i> Inguinal ...	44	—	—	—
<i>(c)</i> Umbilical ...	5	1	—	—
<i>(d)</i> Strangulated ...	6	—	—	—
119. A. Affections of the anus, Fistula, etc. :—				
Faecal fistula ...	4	1	—	—
Fissure of anus ...	3	—	—	—
Prolapse of anus ...	7	4	—	—
B. Other affections of the intestines :—	—	1	594	352
Constipation ...	7,851	4,083	16,415	9,694
122. Cirrhosis of the liver :—				
Other forms ...	2	—	—	—
124. Other affections of the liver :—				
Hepatitis ...	8	—	—	—
Cholecystitis ...	—	2	—	—
Jaundice ...	17	3	—	—
Hypertrophy ...	1	—	—	—
VII. <i>Diseases of the Genito-urinary System</i> (non-venereal) :				
128. Acute nephritis ...	12	6	—	—
129. Chronic nephritis ...	4	3	—	—
130. A. Chyluria ...	2	—	—	—
B. Schistosomiasis ...	2,815	1,064	1,949	793
131. Other affections of the kidneys :—				
Pyelitis ...	7	5	—	—
Haematuria (non-Bilharzial) ...	55	22	—	—
132. Urinary calculus ...	4	1	—	—
Renal calculus ...	2	—	—	—
133. Diseases of the bladder :—Cystitis ...	27	8	—	1
Incontinence of urine ...	1	2	—	—
Retention of urine ...	11	—	—	—
Rupture of bladder ...	1	—	—	—
134. Diseases of the urethra :—				
Stricture ...	2	—	—	—
Abscess ...	3	—	—	—
Other diseases ...	3	1	—	—
135. Diseases of the prostate—Hypertrophy ...	1	—	—	—
136. Diseases (non-venereal) of the genital organs of man :—Epididymitis ...	19	—	—	—
Orchitis ...	14	—	—	—
Hydrocele ...	52	—	—	—
Ulcer of penis ...	10	—	—	—
Phimosis ...	5	—	—	—
Para-phimosis ...	14	—	—	—
137. Cyst or other non-malignant tumours of the ovaries ...	—	2	—	—
138. Salpingitis—Abscess of the pelvis ...	—	11	—	—
139. Uterine tumours (non-malignant) :—				
Fibroid ...	—	3	—	—
140. Uterine haemorrhage (non-puerperal) ...	—	2	—	—
141. A. Metritis ...	—	10	—	—
B. Other affections of the female genital organs :—				
Displacements of the uterus ...	—	9	—	—
Amenorrhoea ...	—	6	—	—
Dysmenorrhoea ...	—	12	—	—
Leucorrhoea ...	—	1	—	—
Ovaritis ...	—	3	—	—
Menorrhagia ...	—	4	—	—
Prolapse ...	—	1	—	—
Vaginitis ...	—	3	—	—
Vulvitis ...	—	3	—	—
<i>Carried forward</i>	48,831	27,816	90,070	64,517

TABLE Vb. Continued.

Diseases.	Hospital		Rural	
	Out-Patients		Dispensaries	
	Males	Females	Males	Females
	48,831	27,816	90,070	64,517
<i>Brought forward</i>				
142. Diseases of the breast (non-puerperal) :—				
Mastitis ...	—	47	—	—
Abscess of breast ...	—	74	—	—
Other diseases of the breast ...	—	3	—	—
VIII. Puerperal State :				
143. A. Normal labour ...	—	36	—	3
Delayed labour ...	—	54	—	—
B. Accidents of pregnancy :—				
(a) Abortion ...	—	14	—	—
(b) Ectopic gestation ...	—	1	—	—
(d) Ante—partum haemorrhage ...	—	1	—	—
(e) Other accidents of pregnancy ...	—	4	—	4
144. Puerperal haemorrhage ...	—	1	—	—
Retained placenta ...	—	15	—	—
145. Other accidents of parturition ...	—	5	—	—
146. Puerperal septicaemia ...	—	6	—	—
148. Puerperal eclampsia ...	—	1	—	—
150. Puerperal affections of the breast ...	—	1	—	—
IX. Affections of the Skin and Cellular Tissues :				
151. Gangrene ...	9	6	—	—
152. Boil ...	657	234	1,274	1,005
Carbuncle ...	77	55	—	—
153. Abscess :—				
Whitlow ...	572	328	371	234
Cellulitis ...	274	10	132	96
Other diseases ...	—	—	1,751	1,575
154. A. Tinea ...	298	98	310	273
B. Scabies ...	8,235	4,796	12,668	10,157
155. Other diseases of the skin :—				
Erythema ...	22	20	—	—
Urticaria ...	105	21	—	—
Eczema ...	1,238	1,003	—	—
Herpes ...	57	18	—	—
Psoriasis ...	42	29	—	—
Prickly heat ...	8	5	—	—
Elephantiasis ...	22	4	—	—
Myiasis ...	6	2	—	—
Chiggers ...	195	92	—	—
Dermatitis ...	277	122	—	—
Acne ...	14	2	—	—
Impetigo ...	528	313	—	—
„ Contagiosa ...	1,511	871	—	—
Lichen ...	2	—	—	—
Pediculosis ...	1	—	—	—
Seborrhoea ...	5	6	—	—
Wart ...	44	25	—	—
Ulcer ...	6,178	2,554	22,550	14,511
Unclassified ...	—	—	4,585	4,245
X. Diseases of Bones and Organs of Locomotion (other than Tuberculous) :				
156. Diseases of the bones :—				
Osteitis ...	13	1	—	—
Periostitis ...	12	2	—	—
Osteo-myelitis ...	32	3	—	—
<i>Carried forward</i>	69,265	38,699	133,711	96,620

TABLE Vb.—Continued.

Diseases.	Hospital Out-Patients		Rural Dispensaries	
	Males	Females	Males	Females
<i>Brought forward</i> ...	69,265	38,699	133,711	96,620
147. Diseases of the joints:—				
Arthritis ...	57	12		
Synovitis ...	113	30	80	53
138. Other diseases of bones or organs of locomotion:—				
Bursitis ...	3	1	—	—
Ganglion ...	17	9	—	—
Lumbago ...	651	229	} 6,165	39,46
Myalgia ...	2,091	1,090		
Tenosynovitis ...	27	31		
Unclassified ...	27	5		
XI <i>Malformations</i> :				
159. Malformation:—				
Spina-bifida ...	—	1	—	—
Other ...	1	—	—	—
XII. <i>Diseases of Infancy</i> :				
160. Congenital debility ...	7	4	—	—
XIII. <i>Affections of Old Age</i> :				
164. Senility:—				
Senile dementia ...	150	5	—	—
XIV. <i>Affections produced by External Causes</i> :				
171. Suicide by cutting or stabbing instruments ...	1	—	—	—
175. Food poisoning:—				
Botulism ...	4	3	—	—
Ptomaine poisoning ...	2	2	—	—
176. Attacks of poisonous animals:—				
Snake-bite ...	47	7	—	—
Insect-bite ...	72	31	—	—
177. Other accidental poisonings ...	1	1	—	—
178. Burns (by fire) ...	742	535	2,899	2,581
179. Burns (other than by fire) ...	37	31	—	—
183. Wounds by firearms (war excepted) ...	1	2	—	—
184. Wounds (by cutting or stabbing instruments) ...	5,788	1,476	—	—
185. Wounds (by fall) ...	4,002	998	—	—
186. Wounds (in mines or quarries) ...	35	7	—	—
187. Wounds (by machinery) ...	29	—	—	—
188. Wounds (crushing e.g., rail accident, etc.) ...	5	—	—	—
189. Injuries inflicted by animals (bites, kicks, etc.) ...	271	72	1,034	737
192. A. Over-fatigue ...	1	—	—	—
B. Hunger or thirst ...	1	5	—	—
195. Lightning stroke ...	1	2	—	—
198. Murder (by cutting or stabbing instruments) ...	22	12	—	—
201. A. Dislocation ...	32	14	—	—
B. Sprain ...	305	68	—	—
C. Fracture ...	104	30	43	16
202. Other external injuries:—				
Concussion ...	737	287	—	—
Bruises ...	510	174	—	—
Foreign body (except eye) ...	90	46	—	—
Abrasions ...	1,336	221	—	—
Unclassified ...	154	58	31,514	12,777
<i>Carried forward</i>	86,739	44,198	175,446	116,730

TABLE Vb.—Continued

Diseases	Hospital Out-Patients		Rural Dispensarie	
	Males	Females	Males	Females
Brought forward ...	86,739	44,198	175,446	116,730
XV. Ill-Defined Diseases :				
205. A. Diseases not already specified or ill-defined :—				
Ascites	24	13	—	—
Oedema	6	2	—	—
Asthenia or debility	199	40	—	—
Shock	—	1	—	—
Hyperpyrexia	58	8	—	—
Headache	1,667	626	—	—
Pyrexia of uncertain origin	4	1	—	—
Diseases not diagnosed	15	2	—	—
B. Malingering	30	—	—	—
Unclassified	98	20 .	6,434	3,128
TOTAL ...	88,840	44,911	181,880	119,858

OBSERVATIONS ON THE NATIVE FOODSTUFFS AND DIET IN THE KOTA KOTA DISTRICT.

BY

H. G. FITZMAURICE, Medical Officer.

GENERAL REMARKS.

The womenfolk have complete control of all matters connected with food and its preparation. They are assisted by their menfolk to a greater or lesser degree in its production. It is neither customary nor polite for a husband to ask his wife questions about his meals. Any such inquiries are insults to the wife. Serious domestic strife is inevitable if etiquette is not observed in such matters. Information obtained directly from men on the subject of food is therefore very unreliable. These facts are at once evident in an investigation of this nature. A man refused to assist me in the study of the diet of his family until I had seen his wife and explained at length to her my aims and objects.

FOODSTUFFS.

In this District two areas have to be considered, (1) the Lake Shore, (2) the Hills.

The following notes refer to *the Lake shore only*. Here the staple food is cassava. Rice is also an important article of diet. Of late years the production of rice has been greatly reduced.

Cassava. In a country overrun by insect and animal pests cassava has many advantages over other staple foods. There is no harvest. The tubers are dug up and used as required. In the ground it appears to have few enemies compared with other food crops. There is no real hunger season.

Preparation.—The tubers are soaked in water for varying periods up to four days. Temperature of the water is a governing factor. The purpose of this soaking is to soften the outer skin and so render its removal easy. After removal of the skin the tubers are dried in the sun. When dry they are ready for pounding into flour.

Cassava tubers are eaten raw, without any preparation other than washing off the earth, to allay hunger when travelling or hoeing. The leaves (*gwada*) are eaten as relish. They are cooked green without previous drying. The outer skin of the tuber is used to make a salty dark-coloured liquid known as *magari*. This liquid is added in small quantities to green relishes.

Magari is prepared as follows.—The outer skin is first thoroughly dried, then burnt. The ash obtained is placed in a small shallow basket, cold water is poured on it and the fluid percolates through the basket into a pot below. This dark coloured liquid, if too salty, is diluted before use. *Magari* is also used in the preparation of snuff. It is evaporated down considerably when used for this purpose. The dried cassava root softened in water, wrapped up in leaves, and baked in the fire is eaten as a 'snack'—*chipunya*.

Rice. Rice is stored on the stalk. It is prepared as follows.—The stalks are spread out on a mat and the grain is separated by one of two methods. 1. By walking about on the mat and rubbing with the feet. 2. By beating with a stick. The husk is removed by pounding in a mortar.

Salt.—Salt is nowadays usually obtained from the local storekeeper. However when money is short, or when the nearest store is a long way off, many plants are used in the preparation of its substitute. The following are the commoner plants used—papyrus, *bango* reeds, water-lettuce, trunks of banana trees. All are plentiful on the Lake shore. Papyrus seems to be the best source. The preparation of 'salt' from these plants is precisely the same as the process described above for the preparation of *magari*. Salt is always added to food in liquid form. The ash is stored and the liquid prepared as required.

The natives make a definite distinction between *magari* and *mchere* (salt).

Fruits.—Mangoes from November to January are very plentiful and are eaten in large quantities.

Bananas are not extensively cultivated. Eaten when obtainable. Available all the year round.

Paw-paws plentiful, eaten in considerable quantities, available all the year round.

Pineapples in the rainy season. Cultivated mainly for sale to Europeans. Not extensively eaten.

Lemons are grown in some villages but are usually sold to Europeans.

Vegetables. Pumpkins, available at the beginning of the rains. Extensively cultivated and eaten. The leaves (*mkwani*) are a popular form of relish. Pumpkin leaves make an excellent vegetable for Europeans when the usual vegetables are scarce. They taste exactly like spinach. Tomatoes are now being cultivated in considerable quantities. They are much appreciated mixed with other vegetables as relish. Melons and cucumbers are grown but not extensively. Ground nuts are an important and valuable crop. The nuts and the oil are widely used in the preparation of various relishes. Sugar cane is popular. Usually eaten raw. Sometimes pounded and cooked with water. The liquid thus obtained is eaten with rice.

Fish.—Fish is the staple relish on the Lake shore and the main source of animal protein. The fish-supply varies very much with the seasons. Regular supplies are not obtainable from March to August. From September to February supplies are usually good. The months of real plenty being November, December, and January. The cost of fish during December and January this year was about 2½ lb. of excellent fish for 1d.

Meat.—A luxury not often enjoyed by the people here. Cattle are few owing to 'fly' and other domestic stock is rarely killed except under very special circumstances.

Milk.—Cannot be considered as an article of diet here as there are practically no cattle.

Eggs.—Hen's eggs are eaten when relish is short. Duck eggs are not usually eaten, they are said to produce skin eruptions. Children rob wild birds nests and eat the eggs. Eggs are eaten boiled or fried in groundnut oil.

Telele.—All forms of green leaf relishes are known generally as *telele*. There are large numbers of wild plants, the leaves of which are habitually eaten as relish. These relishes are never eaten when any form of animal protein is available. It is of interest to note that women appear to have a more extensive knowledge of edible wild plants than most men. I give below a list of some of the more popular *telele*, both wild and cultivated. The native names are given. These names are the names of the part of the plant eaten, i.e. the leaves, and not of the plant itself. They are arranged according to the time of year that they are available.

(1) *Green leaves available all the year round.*

Mawingwe. Grows in swamps, a popular relish.

Chewe. Grows everywhere.

Kapuku. Grows everywhere.

Kazilila. Grows in swampy ground.

Mtantanyelele. Grows everywhere.

Kasungwe. Grows in swampy ground.

Katambala. Grows everywhere.

(2) *Green leaves available in the rainy season.*

Bondwe. Grows in swampy ground.

Ntumpya. " " "

Kalamantila. Grows everywhere.

Zumba. " " "

Kazota. Grows in swampy ground.

Chileze. Grows everywhere.

The cultivated green leaf relishes are :—

Gwada, cassava leaves, *mkwani*, pumpkin leaves, *mtolilo*, sweet potato leaves.

The green leaves are cut up and pounded before cooking, they are never dried in the sun; pounded groundnuts and tomatoes are, when obtainable, added to all forms of *telele*.

Diet.—The native appears to have no hard and fast rule as to the number of meals eaten each day. It is mainly a question of supplies and opportunity. He will not eat porridge without relish. Work or 'affairs' may keep him away from home during the day. An early morning meal is not usually eaten if there is work to be done. Under such conditions a mid-day meal and an evening meal are the rule.

In the hoeing season, when there is perhaps the greatest physical output and therefore a greater need for extra food, there may be only one meal a day owing to pressure of work. As the men here do little hoeing the women are the main sufferers at this time. Their endurance is truly amazing. They walk perhaps three miles or more to the gardens in the early morning carrying perhaps a baby, a basket and a hoe. They hoe most of the day and return home at sundown with the basket full of cassava roots and weighing not much less than 30 lb. The evening meal has still to be prepared on arrival home.

I attach two tables. Table No. 1 gives approximately details of food eaten by eleven mission school-girls over a period of one week in December, I am indebted to the U.M.C.A. for making it possible for me to procure these data.

Eleven literate school-girls all aged about sixteen years kept records. These girls have no better facilities for procuring food than the average villager. They live in the village under conditions similar to the ordinary villager. Their diet would be similar to that of any adult at the period of the year. The height, weight, and general nutrition of each girl is noted.

Accurate weighing of all food was not possible. The measure usually allowed per head per meal was weighed. Multiples of that amount were taken to estimate the amount of flour eaten each day. The recorders noted the type of fish eaten at each meal and the average weight of that particular type was taken in estimating the weight of fish eaten. The estimated caloric values per head are necessarily approximate as none of the foods have been analysed.

I have assumed that cassava contains between 80 and 90 per cent. of carbohydrate and little else. Fish I have assumed to contain about 3 per cent. of fat although I imagine the percentage is probably much higher.

Name	Height	Weight	Teeth	Nutrition	Cassava. Average Amt. eaten per day.	Fish. Average Amt. eaten per day.	Other foods. Average Amt. eaten per day.	Animal Protein. Grams per day.	Vegetable Protein. Grams per day.	Total Protein—Grams per day.	Fats. Grams per day.	Carbohydrate. Grams per day.	Calories.	Total meals in the week	REMARKS. (Extra not included in table, but eaten during the week).
A	5 ft. ½ in.	7 st. 1 lb.	Ex.	Good	36.5 ozs.	8.3 ozs.	5 ozs. Rice	38	18	56	11	943	4,095	20	Mangoes 34. Telele with 7 meals (fish with the others).
B	4 ft. 8 ins.	6 st. 6 lbs.	Ex.	Good	20.5 ozs.	7 ozs.	4.5 ozs. Rice	30	18	48	8	638	2,816	13	Mangoes 15. Bananas 8 (fish with all meals).
C	Not seen developed measles.				25 ozs.	5.7 ozs.	—	26	12	38	7	655	2,835	10	Mangoes 18. Telele 4 meals. (Fish with other meals).
D	4 ft. 8 ½ ins.	6 st. 5½ lbs.	Ex.	Good	28.5 ozs.	8 ozs.	Meat 3.4 ozs.	57	13	70	15	745	3,395	10	Mangoes 32. (Fish or meat with all meals).
E	5 ft. ½ in.	5 st. 11 lbs.	Ex.	Thin	29.7 ozs.	5.7 ozs.	Meat 1 oz.	31	14	45	9	772	3,349	15	Mangoes 30. Telele with 6 meals. (Fish or meat at others).
F	5 ft.	5 st. 13½ lbs.	Ex.	Thin	33 ozs.	7.1 ozs.	—	32	16	48	9.5	870	3,757	16	Mangoes 14. Telele at 5 meals. (Fish at others).
G	4 ft. 10½ ins.	7 st. 5 lbs.	Ex.	Good	29.7 ozs.	5.4 ozs.	Rice 2 ozs.	23	18	41	7.5	818	3,503	16	Mangoes 30. Telele 4 meals. (Fish at others).
H	5 ft. 1 in.	6 st. 12 lbs.	Ex.	Good	33 ozs.	4.8 ozs.	Rice 2.8 ozs.	22	21	43	8	934	3,980	14	Mangoes 35. Telele at 1 meal. (Fish at others).
I	5 ft. ½ in.	6 st. 4½ lbs.	Ex.	Good	33 ozs.	8 ozs.	—	36	16	52	10	870	3,778	16	Mangoes 31. Telele at 4 meals. (Fish at others).
J	4 ft. 8 ins.	5 st. 4½ lbs.	Ex.	Thin	39.4 ozs.	7.1 ozs.	Meat 1.1 ozs.	39	19	58	12	1,024	4,436	17	Mangoes 12.
K	4 ft. 9 ins.	6 st. 13 lbs.	Ex.	Good	25.7 ozs.	3.7 ozs.	—	17	12	29	5.5	670	2,845	9	Mangoes 4.
Ave- rage	4 ft. 10.8 ins.	6 st. 6.2 lbs.	—	—	30.3 ozs.	6.6 ozs.	Rice 9 ozs. Meat 5 ozs.	32	—	48	9.3	812	3,523		

Table No. 2 shows the actual weighed food eaten by a family of six over a period of three weeks and four days in the month of December, 1936.

The family consists of husband, wife, and four children. Husband—Height 5 ft. 10½ ins. Weight 11 st. Wife—Height 4 ft. 11 ins. Weight 7 st. 6 lbs. Child (F) aged 7½ years, 3 ft. 8½ ins., 2 st. 13½ lbs. Child (M) aged 5½ years, 3 ft. 4½ ins., 2 st. 9½ lbs. Child (M) 3½ years, 3 ft., 2 st. 3 lbs. Child 18 months (F) Weight 20 lbs., With the exception of the eldest child, the childrens' weights are almost the same as those of European children of their age. Between the ages of seven and fourteen African children appear to be at their worst physically. They have, I imagine, acquired all their parasites but not their immunity to them.

TABLE No. II.

Dec. 1936.	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st	Total	Remarks
Cassava Flour. Pounds.	9	9	9	9	9	9	9	7½	9	7½	7½	9	7½	7½	9	9	9	7½	9	9	9	9	7½	9	7½	211½ lbs.	
Rice Pounds.	—	—	—	—	—	—	2	—	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	6 lbs.	
Milk Pints.	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½	12½ pts.	Unusual. Most of the milk was given to youngest child.
Fish Pounds.	—	—	½	2	—	—	—	—	—	½	2	2	1	1	1	1	2	1	—	1	—	2	1	—	—	18 lbs.	'Telele' was the re-lish when fish was not available.
Mangoes	—	5	—	19	—	9	—	—	5	—	—	—	—	10	—	19	—	10	15	—	—	—	—	—	—	92	
Bananas	—	—	—	—	—	13	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28	
Pumpkins, Pounds.	4½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4½	

N. B.—The father of this family is of the *capitao* class and earns about 30/- per month. Two meals a day were actually eaten—at noon and sunset.

COOKING.

Practically all foods are boiled in water. With better methods of cooking, diet would be definitely improved. The water in which green foods are boiled is usually included in the meal.

A simple method of steaming food is, I believe, employed in West Africa. It could with advantage be introduced into this country.

SUMMARY.

1. The foodstuffs available in the area under review are listed.
2. The period of the year in which they are available is noted.
3. The method of preparation of the raw product for consumption is given.
4. Tables are given as a guide to the approximate amount of food eaten daily by the individual.
5. Heights and weights are given as an indication of general physical condition.

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* SPINAL ANAESTHESIA WITH SPECIAL REFERENCE TO ITS USES IN NYASALAND.

BY

H. D. CRONYN, F.R.C.S., (EDIN.), D.T.M. & H. (LONDON.)

Spinal anaesthesia has been in use now for over twenty years, but in England, except in the hand of a few surgeons, it has not taken the place of general anaesthesia to any great extent. The chief reason of this, of course, is that a skilled anaesthetist is always available, so that the surgeon has no anxiety about danger to his patient from the anaesthetic, and spinal anaesthesia is reserved for special cases such as amputation in diabetic gangrene, when it is the anasthetic of choice. (Ref. Carson's Modern Operative Surgery.) Another reason is that in its early days spinal anaesthesia was chiefly used for cases desperately ill and suffering from shock, and this, together with the fact that more toxic drugs were used, give a mortality higher than the inhalation anacsthetics. The experience gained during the Great War has shown that spinal anaesthesia, owing to the fall in blood pressure produced, should not be employed in cases already suffering from severe shock, but that in the normal case an operation under it produces less shock than inhalation anaesthetics. (Ref. Carson's Operative Surgery.) Finally, there is the idea that, for psychological reasons, people may prefer to be unconscious during an operation so that they are entirely unaware of what is going on.

Very soon after I commenced doing major operations in Nyasaland, I realised what immense advantages spinal anaesthesia has over chloroform or ether whenever it can be employed. We will picture an abdominal operation, say an appendicectomy, in an out-station with an unskilled anaesthetist, perhaps a hospital dispenser, giving chloroform. First we have the violent and distressing struggles of a strong native during the induction, needing the surgeon and several assistants to hold him down. Then the operation is commenced, but after a short while has to be suspended while artificial respiration is administered. This naturally gives our anaesthetist a scare, especially as the surgeon has probably used strong language at him, so, later the patient begins to come round and strain, and several yards of gut pop out of the wound. Finally the vomiting patient is removed to the ward where he needs attention for an hour or more to see that no harm comes to himself or to the wound.

Compare this picture, possibly exaggerated, but most of us have seen exactly similar cases, with the same patient lying perfectly quietly under a spinal anaesthetic. The surgeon is able to give his undivided attention to the actual operation, there is perfect muscular relaxation, and the operation is completed much quicker and with less nervous trauma to the surgeon as well as to the patient. Natives have the happy knack, like animals, of being able to snatch a doze when there is nothing better to do, and many of my patients sleep throughout the operation. When the perfectly conscious patient goes back to the ward, there is no fear that he will interfere with his wound, there is no vomiting, and the operation area remains semi-anaesthetic for several hours, so there is little post-operative pain. The last facts are particularly valuable in a native hospital where skilled nursing is seldom available. A basal anaesthetic, such as avertin, has many of the advantages of spinal anaesthesia, but skilled attention is required both before and for several hours after the operation.

I now use spinal anaesthesia for all operations below the level of the costal margin in adults. The following, in my opinion, are the only extra-indications:—

- (a) Patients very badly shocked or very gravely ill. These should be operated upon with nerve blocking or local infiltration.
- (b) Sepsis in the region of the lumbar spines, or deformity preventing lumbar puncture.
- (c) Any mental condition in the patient which would render him unlikely to remain quiet for the duration of the operation.

My own experience is that natives much prefer this to chloroform or ether, as with the latter they apparently believe they are killed and brought to life again. I have had several cases of natives coming forward to have operations performed when they have heard of this method when they had refused operation upon previous occasions.

I will now briefly describe the technique employed. In this country I have always used novatox, which is a proprietary brand of ethocaine, as it does not require sterilisation, and seems to be particularly non-toxic. The average dose is 10 cc. of a 2 per cent. solution. On the evening before operation a simple purgative such as castor oil is given, or else an enema on the morning of the operation. No pre-operative medication is required, and in weakly cases or emergencies, the purgative or enema can be omitted. The skin of the back is sterilised at the same time as the operation area, including the iliac crests, so that the landmarks can be felt without contaminating the surgeon's hands.

The spinal puncture is made on the the operating table with the patient either sitting, or lying on the left side, in both cases with the back well arched to open up the intervertebral spaces; but the sitting position is preferable as it renders the puncture easier. The site of the puncture is exactly in the mid-line at the level of the highest point of the lilac crests, so that the needle enters between the 3rd and 4th lumbar spines. First, a 2-cc syringe is filled with the anaesthetic solution, and after a wheal has been raised on the skin, the path of the spinal needle is infiltrated with the solution; thus rendering the whole procedure practically painless. The spinal needle is then introduced in a forward and slightly upward direction, and at a depth varying from 1 to 2 inches. The resistance of the *ligamentum subflavum* is felt, when a little extra pressure causes the needle to enter the spinal canal. The stylet is withdrawn and, allowing only a little cerebro-spinal fluid to escape, a 10-cc syringe filled with the anaesthetic is attached to the needle and the fluid slowly introduced.

Then the needle is withdrawn, and the small puncture wound sealed with a collodion dressing. The patient is slowly lowered to the position required for the operation, cotton wool is placed in the ears and the eyes bandaged. By the time that the surgeon has scrubbed up again, donned gloves, gown, etc., and fixed the towels in position, I have always found that there is sufficient anaesthesia to commence the operation.

I have here a record of 50 cases operated upon by myself in Nyasaland employing this method so that from experience I have learned what difficulties or complications may occur. First as to the actual spinal puncture. If the needle on entering encounters bone, or, on withdrawing the stylet blood appears or no cerebro-spinal fluid, it best to withdraw the needle and perform a fresh puncture, after verifying the landmarks and making sure that the back is arched as much as as much as possible. In two of my early cases the patient had nausea and some retching early in the operation, but this has not happened since I have made a practice of lowering the patient very slowly and carefully to the recumbent position. I have found also that by allowing as little as possible of the cerebro-spinal fluid to escape, the patient does not complain of the post-operation headache with which a spinal anaesthetic is often credited. In two of the series, *i.e.* in 4 per cent. a little open ether had to be administered in order to complete the operations. Both these operations lasted well over an hour.

Blood pressure. Last week I took a series of readings of the systolic blood pressure during an operation for radical cure of an unguinal hernia in a healthy adult:—

- (a) Before giving the anaesthetic. 155-mm. of mercury.
- (b) Immediately after giving the anaesthetic. 140-mm.
- (c) At completion of operation. 140-mm.

Thus it seems that a spinal anaesthetic causes a definite fall of blood pressure, but that an operation of moderate duration causes little or no further fall. Thus the reduced blood pressure does not matter in an otherwise healthy person, but it would not be wise to operate on a case whose initial pressure did not exceed say a 100-mm.

Here are the operations performed in the series

Amputation of the lower extremity	...	...	...	6
Haemorrhoids	...	...	...	1
Appendicectomy	...	...	...	2
Hernia operations	...	...	...	8
Caesarian section	...	...	...	3
Intestinal obstruction	...	...	...	1
Perinephric abscess	...	...	...	1
Nephrectomy	...	...	...	1
Salpingectomy	...	...	...	4
Ovarian cyst	...	...	...	1
Compound fracture	...	...	...	1
Various tumours	...	...	...	3
Castration	...	...	...	4
Vesical calculus	...	...	...	3
Psoas abscess	...	...	...	1
Hip joint operation	...	...	...	1
Vesico-vaginal fistula	...	...	...	2
Rupture of bladder	...	...	...	1
Carcinoma of bladder	...	...	...	1
Hydrocele	...	...	...	4
Femoral periarterial sympathectomy	...	...	...	1
Total				50

There were two deaths in the series, neither of which could be attributed in any way to the anaesthetic.

To conclude, I wish to say that there is no originality in this work, but I have myself been so satisfied with the results that I hope my experiences will be of assistance to anyone else undertaking major surgery in Nyasaland or in similar countries in which, in order to obtain any good results, one has to make the most of one's material with often very inadequate assistance.

*From a paper read to the Nyasaland branch of the British Medical Association on the 10th of July, 1936.

INTERESTING CASES.

(I) CASE OF GUMMA OF THE CEREBELLUM

REPORTED BY W. H. WATSON, MLANJE.

Dated 15th August, 1936.

Complaint. An adult male African aged approximately 30 years was admitted to hospital on the 23rd May, 1936 complaining of giddiness and unsteadiness of gait.

History. The symptoms described above appeared one month before admission and increased in intensity daily.

Previous History. The patient stated he had always been healthy and on questioning gave no history of ear trouble, headache, vomiting, or disturbance of vision. He did not admit of any venereal infection.

Appearance. The most noticeable feature about the patient was the constant succession of tremors, spasms and rhythmical movements of his whole body when standing or sitting. These movements were almost like a case of Huntington's chorea. The face twitched violently in speech as did also the tongue producing the occasional effect of explosive speech. His gait was reeling, lurching and highstepping and together with his tremors and spasms he presented a most grotesque appearance as he walked. The ataxia was not increased by closing the eyes (no Romberg's sign). The reeling and lurching was most marked to the right side. He had the feeling of revolving to the left. The attitude of the head at rest was occiput pointing to right shoulder with the shoulder depressed. There was no nystagmus, no skew deviation, no dysdiadochokinesis, no hypotonia or asthenia.

C. N. S. The knee jerks were exaggerated, but there was no babinski or ankle clonus. The fundi were normal. Sensation was unaffected. Pupil reaction normal.

Other Systems. No other signs of disease were noted.

Positive findings suggesting the cerebellar syndrome were therefore ;—

Ataxia—with astasia and hypermetria.

Gait—reeling and lurching, the patient deviating and tending to fall to the right.

Attitude—Occiput pointing to the right shoulder which was depressed.

Vertigo—A sensation of revolting to the left.

Tremors, spasms, and choreiform movements.

The patient's blood was positive to Sachs Georgi test as was also his wife's blood.

Treatment for syphilis was instituted and within one month all symptoms and signs had disappeared and the patient was dismissed at the end of nine weeks stay in hospital with the advice to return for more treatment in a month's time.

(II) CASE OF CORONARY OBSTRUCTION SIMULATING THROMBOSIS.

REPORTED BY W. H. WATSON, M.O., MLANJE.

Dated 15th September, 1936.

Name of Patient—Garnet.

Sex and age. Male, *Act.* 45, approximately.

Employment. Native Postmaster, Mlanje.

Complaint. Extreme breathlessness, severe pain over the lower end of the sternum and the heart region and swelling of legs.

History. The patient stated that he had had good health up to two years ago, when he developed asthma (cardiac). As a young man he had primary syphilis which was treated "successfully" by native medicines.

He was a confirmed beer drinker and in the last two years had taken to drinking *kachaso*, a crude, potent native spirit. He was often drunk on this but kept to his work.

On 2/9/36 he was attacked by a severe pain in the chest accompanied by increasing breathlessness. He was unable to work and lay for two days in his house. On the 4/9/36 the Superintendent of Police heard about him and brought him to hospital in his car.

Physical Examination.

Appearance. The patient's face had that peculiar pallor seen in an African when he is petrified by cold. Beads of sweat stood out on the forehead. The lips were cyanosed. The body surface was cold and clammy and there was marked oedema of both legs and commencing oedema of penis and scrotum. Acute dyspnoea was present. The patient's expression was fixed and masklike and he was obviously suffering from a most severe and commanding pain. Asked where the pain was he placed his clenched fist over his heart then made a to and fro movement of his hand over the front of his chest—he spoke haltingly. The pain had been continuous over two days, he had not slept and had taken no food beyond sugar and tea. His temperature was sub-normal.

Lungs. Coarse crepitant rales were heard all over the chest mixed with friction sounds—the percussion note was relatively dull at the bases. Pleuro-pericardial friction was present.

Heart. The apex impulse could not be made out. Heart dullness was increased on the left side, the heart sounds could with difficulty be made out as faint sounds without any murmurs and regular in rate. The pulse was slow and weak with irregularity of force but not of rate or rhythm.

Abdomen. The liver was enlarged a handsbreadth downwards and was tender to pressure. The spleen was not palpable. There was rigidity of the upper part of the abdomen with tenderness on pressure but none in the lower abdomen. The urine was not examined in life. The blood pressure was determined.

The patient died suddenly fifteen hours after admission.

Post Mortem Examination.

At post mortem the lungs showed old pleural adhesions with a mass of more recent ones. The lungs were markedly oedematous.

The heart was obviously a big one and interesting pathologically so that I sent it to the Pathologist, whose report is attached. The only addition I can make to his description, as, of necessity, appearances were better with the fresh organ, is that the coronary arteries showed atheroma which appeared like tiny grains of sand along their courses. At one spot on surface of the left ventricle there was a scar-like depression as if the surface had been puckered in by contracting fibrous tissue.

Report on the Examination of one Human Heart.

“The above heart was much increased in size, measuring 15×14 cms., in its greatest dimensions. It weighed 415 grammes, which figure is greatly in excess of normal. The thickness of the musculature of the left ventricle was 1.8 cms., and of the right ventricle 0.5 cms. There was evidence of marked fatty degeneration, associated with marked hypertrophy of the left ventricle, and dilatation and thinning of the right ventricle.

Well marked atheromatous patches were present in the aorta, with thickening and fibrosis of the aortic valves. The coronary arteries were much thickened and tortuous, and the interior vessels had an obstruction in a situation about 2 inches from the proximal end of the vessel. I could not however discover any evidence of a coronary thrombosis in the myocardium, probably because the specimen had undergone considerable alteration due to the preserving fluid.

Agonal clots were present in the left chambers. The condition of the organ suggests the possibility that the lesions described had their origin in a syphilitic or yaws infection. The appearance of the atheromatous patches is more suggestive of yaws than syphilis”.

Liver. The liver was greatly enlarged, extremely fatty, and also was the seat of fibrosis.

Spleen. The spleen was normal.

Kidneys. The kidneys had the appearance of the “red granular kidney”.

Diagnosis. Clinically the case was one of coronary thrombosis, although no definite infarct was found by the Pathologist. The obstruction mentioned in the anterior vessel 2" from the proximal end of the vessel was apparently not complete enough to prevent some blood getting through but being near the origin of the vessel must have caused an acute loss of blood supply over a relatively large part of the heart muscle. It is obvious that, with this obstruction, thrombosis was likely to occur in this case but, owing to its position acute heart failure occurred before it could do so.

In view of the recent differentiation of coronary thrombosis as a clinical entity the case is of interest in that a marked degree of obstruction is sufficient to give the same clinical picture.

(III) CASE: TABES DORSALIS.

REPORTED BY: H. D. CRONYN, MEDICAL OFFICER.

Date: 21st October, 1936.

From Fort Johnston.

Sergeant Sukali of the police was admitted to the hospital as an emergency in the middle of the night of 10/9/36 and the Medical Officer was called to see him. He was suffering from extremely severe pain in the chest and abdomen, accompanied by nausea and retching. The agony was such that the Medical Officer's first thought was of a perforated peptic ulcer or else a coronary thrombosis. Careful examination, however, showed that the proper physical signs of

neither were present. The pupils were therefore examined and were found to be small, no reaction to light was obtained. The knee-jerks were also tested and found to be completely absent. It was therefore decided that the condition was a gastric crisis due to tabes, morphia was administered and further examination postponed till morning.

Examination 11/9/36. No history of syphilis obtained. An interesting fact was found in the records which showed that Sergeant Sukali was in hospital in May 1935 with a similar attack when he also required morphia. The true significance of the attack, however, had been missed as it was diagnosed as colic due to hookworm.

Nervous System. Argyll-Robertson pupils.
 Other cranial nerves normal.
 Knee-jerks negative.
 Ankle jerks negative.
 Vibration sense in tibia absent.
 Romberg's Test negative.
 Slightly ataxic gait.
 Balancing test positive.
 No areas of anaesthesia found.

Samples of blood and cerebro-spinal fluid were taken and sent to the Pathologist, and anti-syphilitic treatment commenced immediately.

PATHOLOGIST'S REPORT.

"*Blood.* Sachs-Georgi Test—strongly positive.

C.S.F. Colloidal gold curve characteristic of tabes dorsalis".

On 29/9/36 the patient was transferred to Zomba hospital, showing some improvement.

Conclusions. A case of tabes dorsalis in a male adult native is described. From the prevalence of syphilis in this country there must be more cases of syphilis of the central nervous system than are reported. This is probably because of the difficulty of obtaining proper histories from native patients, and because examinations in a busy out-patient department are inclined to be perfunctory.

Further interesting cases are briefly mentioned only :—

- (i) Liver abscess in adult male native—operated on and recovered.
- (ii) Carcinoma of the bladder apparently supervening upon schistosomiasis.
- (iii) Suppurating ovarian cyst and pyosalpinx, removed successfully.
- (iv) Oxalate bladder stone weighing $2\frac{1}{2}$ oz. removed supra-pubically.
- (v) An ulcerating dermoid carcinoma of the buttock.
- (vi) A large adenoma of thyroid, removed successfully.
- (vii) Carcinoma of the stomach, hour glass contraction, leather bottle type.
- (viii) A case of Klumpke's paralysis.
- (ix) Clinical case of duodenal ulcer, typical symptoms X-ray appearance and test meal results—refused operation.
- (x) Gas gangrene of the neck.
- (xi) A case of 'dermoid cyst' removed from a male breast.
- (xii) An epulis growing from the mandible, measuring $4'' \times 3'' \times 2''$.
- (xiii) Congenital absence of rectum in a child 2 days old.
- (xiv) Primary tuberculosis of subacromial bursa in a female adult of about 40 years of age.
- (xv) Tuberculosis of wing of scapula in woman of about 30 years of age.
- (xvi) A case of perforated duodenal ulcer.
- (xvii) A case of sarcoma of the maxilla in a child of 7 years with secondaries infiltrating :—
 peritoneum, splenic flexure, spleen, both kidneys, ureters, suprarenals, inguinal and femoral glands.
- (xviii) Adamantinoma of the mandible, growth occupied the greater part of the mandibular arch with great deformity.
- (xix) Two cases of severe amoebic dysentery in natives with death.
- (xx) Cases of gross oedema and ascites with heavy infestations of hookworm and bilharzia, treated with success by the 'High Protein Low Salt' diet—uncured.
- (xxi) A case of 'fits' over left side of body with left hemianaesthesia and analgesia with flaccid paralysis after a short illness with high fever 6 months previously. 4 fits a day on admission. An encephalitis?

REPORT OF A SURVEY OF THE WEST NYASA DISTRICT.

BY D. P. TURNER, Medical Officer.

The district is principally inhabited by the Atonga people, there is one small area which is inhabited by a slightly different tribe, the Asisya. The population, including those absent, is roughly 50,000. It can be roughly divided into three areas, (a) south of Chinteché stretching to the Dwambadzi river, this is a flat, fertile stretch reaching perhaps two miles deep from the Lake shore and has a rainfall similar to the other Lake shore areas; (b) Chinteché to Nkata bay, this is largely tropical forest with a very big rainfall, rubber is grown; (c) the third area consists of broken and stony hills stretching back to the Vipya plateau. The vast bulk of the population live in the first two areas, in the hills are a few scattered villages, and included in this part is the small peninsula of Usisya, containing some 10,000 people, but completely cut off by a precipitous range of hills rising some 1,000 feet behind, rendering approach, except by water a very difficult matter.

In the first area cassava is the only crop of any magnitude, some being exported for sale, a little maize is grown, some beans, sugar-cane, and bananas.

In the second area, cassava is, I am told, the only possible staple food as the rainfall is so great, there is a large and successful rubber plantation here. In this and the first area rice can and has been grown, but owing to locusts the last crop grown was two years ago; there is a quantity being planted again this year.

In the hills, cassava is the principle crop, more maize is grown than in the other areas, but it is probably a dangerous crop, as one season's cropping sickens the land.

I am doubtful if the district can grow enough to support its inhabitants without the assistance of outside money.

The Atonga People. I was fortunate enough to find a number of old men whose memory was clear and good, and who were only too willing to talk about their life prior to the coming of the British. A number had been slaves to the Angoni, who had, I think, captured them as children and brought them up almost as Angoni, and used them as slave raiding battalions, they do not seem to have minded their lot. There were a number also who had never been captured and had many desperate engagements to recall, it was from these people I have formed what I hope, is an accurate picture of the pre-British Atonga.

They were primarily a hunting tribe, growing but little cassava, living on the game and fish they could capture; with their hunting they did some slaving, the unfortunate Achewa being, I imagine, their usual prey, when they had a goodly store of slaves and ivory they formed a convoy for Zanzibar to sell them. It was about a month's journey; they were paid principally in cloth, in guns and powder.

The Atonga are a pagan people, and their only real belief is in witches and witch-craft, and they have acquired a very powerful brand, possibly from their early observations of the pot-pourri of witch-lore prevalent in Zanzibar, this belief explains why they were converted to Christianity in the early days, as seeing the fearless nature of the early missionary, hearing him threaten hell fire to the disobedient, protected only by a little book, they decided that this was medicine indeed, and joined him. These early missionaries soon started to teach reading and writing, and the demand for clerks and boys who could read and write increasing at this time they were able to walk into well paid and easy jobs. They realise how much this power of writing makes for an easy life, and now pay for their children to be educated, in many cases sending the money from abroad, I find it surprising that they do do this, as my experience leads me to believe that the Atonga are neither so observant, easy to teach, or generally intelligent as the Achewa. They hate all manual labour. Naturally all agricultural labour is left to someone else to do if they can, they employ natives from the Portuguese side of the Lake to hoe for them, paying in a little cassava. Cassava being an easy crop to grow and one which will always produce bulk to fill the stomach is the only crop they grow seriously, they realise it is not such a good food as maize, and say—in those areas where it might be grown—that they do not grow maize because they never suffer from famine as do the maize-growing peoples, the monkeys steal it, the women find it harder to grind, the children are either at school, or too busy playing at “marching bands” to help with the crop, it makes the land hungry, and necessitates a lot of work in clearing fresh fields. The principal reason for not growing it is that it means more work than the cassava and it is too much trouble; whether it is a suitable crop or not I cannot give an opinion, as I do not know enough of the agricultural side.

I have not met before an African tribe so interested in clothes; what stock is to a Somali, clothes are to the Atonga, sitting and talking to the men in the villages the conversation was always turned at some time to clothes, “what beautiful stuff we used to be given in lieu of pay, now we only get money”. I believe that the Atonga considers his clothes to be more importance than his women, in the same way as with a stock-raising people it may be doubtful as to which is the more important, camels or women. This desire for fine raiment is having a most unhealthy effect on the people, they prefer European clothes, and succeed in getting some most unsuitable stuff, shoes which pinch and spoil their feet, tight collars, overcoats, everything is worn at once,

the result is that they are the only African people I have met who smell dirty. In connection with this I saw one old woman who had secondary syphilis, she said, and I believe it, that she had caught the disease by using some of her son's clothes to keep herself warm at night. One man met was actually wearing glasses, for effect, as his eyes were sound, but the glasses had lenses giving him the most fearful headaches.

Religion. They are pure pagans having no real beliefs except in witchcraft, and its attendant devils. Witchcraft is still exerting an enormous influence on the people, as coupled with it is the work of the poisoner, and they believe that a lot of undetected poisoning goes on, and this makes them terribly afraid. I was quite unable to find out anything until, I remembered how to poison beer, and by giving a demonstration I made them think I knew more than they did, even then each talk was always preceded by the exorcism "you have started this discussion, *Bwana*, not us." They believe that the witchcraft acts in many ways and is generally connected with poisonings; poisons can be given in the beer, so that the victim dies, and not the poisoner; poisons can be given in the food in some similar way, the poisoner does not suffer but the victim does, the witches make snake-like figures and put them on the lintel, these are supposed to bite the man who dies, meat can be poisoned in a game-pit so that the owner of the pit dies when he eats it. The witches can of course *wish* to death, of this there is no possible doubt, although some of the more enlightened Atonga realise that this is a matter of faith. They also make abortifacients which are in very common use.

During some of our talks together on this subject the men were grey with fear, I am emphasising this as I shall later consider a method of using this fear for their benefit. They consider that they have been let down by the Government in this matter (unfortunately in most of their complaints, we could have done nothing else, we had to stop ordeal by poisoning, and they bring up most of their witchcraft cases to the *Boma* with lamentably insufficient evidence) and they have gained the impression that we do not believe in witchcraft, and consider that when they come and say that witchery exists, we just say we know it does not and therefore it cannot. They say that one of the effects of this attitude is that witch practice is on the increase, in the old days each village had its official medicine man, and anyone else who kept medicine in his hut was automatically suspect, such was the fear of ordeal by poisoning. Now anybody can keep medicine in their houses, as the Government protects them so that there are many more potential poisoners.

Marriage. The money in the tribe is very unevenly divided, there are some remarkably rich men who hoard their money in their huts, but there are a great number of poor, this influences the behaviour of the young men regarding marriage; a rich man will advance his son the bride-price and help him to live for the first year or two after his marriage, usually until the second child is born, or about to be born, then the young man goes for his first trip abroad to earn the money to repay his father, and to get enough for another holiday. The poor man's son has to go abroad to earn his money first, he then comes back and pays for his wife and lives with her for the first two or three births, after this he goes abroad to earn more.

Girls are marriageable after the second menstrual period has been seen, I think that some form of engagement is usually entered into, and they seem to have a free choice of husband; I think they are usually married between 15 years and 16 years; unmarried girls of over 16 years are distinctly uncommon.

Mothers and Infants. Usually the first child is born when the mother is only about 16 years old. Miscarriages appear to be very common, probably more so than is shown in the table attached, as the men objected to my asking their wives intimate questions, and I could get no accurate answers until they were moved off. I had hoped that the history of these miscarriages would be helpful in diagnosing syphilis, but except in rare cases I was disappointed. I found, however, that the women are accustomed to take medicines towards the end of their pregnancy; there are several kinds, the pure abortifacient which is fairly common, obtained either from the local doctor or made by the women, I gather that this is very potent, as several of the women told me that besides successfully getting rid of the child, they nearly accompanied it; these abortifacients are used not only for getting rid of illegitimate children, but also perhaps to save the mother the worry of rearing the child.

During pregnancy they take no extra or special food, and work on till the end, after birth they stay in their huts for some 10 days, then undergo a purification, after which they start work again, they take no special food while nursing the baby.

The infant as soon as the purification is over is started on food, the mother makes cassava gruel, and morning and evening shovels one to two handfuls down the baby's throat; if the child succeeds in refusing to take this gruel it is tried on maize gruel, if this, too, is unsuccessful, Lake or pond water is given, or if more convenient stream water, if all these attempts at extra feeding are unsuccessful, I believe balls of cassava porridge are pushed down its throat. The women denied this practice but I saw it happen once, and was told that that was a bad woman, but I think this is a common practice. If they are utterly unsuccessful in all these attempts—and the child is still alive—they wait until it is a year old and then start on "all food" porridge, fish, *kungu* cake, greens, *usipa*, and, if there is any, meat. The infant is weaned at any time, from 1 year to 2 years is the average, but I saw children of 9 months who were weaned.

TABLE SHOWING BIRTHS, LIVING AND DEAD CHILDREN AND STILL-BIRTHS

Village	Mothers	BIRTHS.		LIVING.		DIED				STILL BIRTHS.	
		Total	No. per head	Total	No. per head	Under 2 years	2—10	10 & Over	No. per head	Total	No. per head
Malenga ...	28	104	3.7	55	2	16	2	7	.9	23	.8
Chavula —	25	100	4	58	2.3	21	2	9	1.3	10	.4
Zilakoma ...	26	94	3.6	44	1.7	24	4	5	1.3	17	.6
Damba ...	43	182	4.2	96	2.2	38	12	11	1.1	25	.6
Chinteché ...	64	271	4.2	100	1.6	59	35	37	2	40	.6
Hill Villages ...	85	439	5.2	245	3	92	30	23	1.7	49	.59
Asysia ...	61	183	3	90	1.5	51	9	8	1.1	25	.4
Mwengu ...	38	146	3.8	85	2.2	26	11	10	1.3	14	.3
Nkata Bay ...	34	174	5.1	94	2.8	40	9	8	1.7	21	.6
Mankimbila ...	25	90	3.6	45	1.8	17	10	5	1.3	13	.5
Karonga ...	58	271	4.7	143	2.5	70	22	9	1.7	27	.5
Mother's Age Groups											
Under 20 ...	51	92	1.8	62	1.2	21	—	—	.4	10	.2
20-25 years ...	105	280	2.8	189	1.9	60	7	—	.7	24	.2
25-35 years ...	201	923	4.6	491	2.5	230	65	16	1.6	121	.6
Over 35 yrs. ...	115	656	5.7	255	2.2	122	72	107	2.6	99	.9
Totals Lake Shore ...	387	1,513	4	752	2	341	114	100	1.5	205	.54
Grand Total ...	472	1,952	4.6	997	2.1	433	144	123	1.6	254	.5

The table above is probably accurate as to the number of births and deaths of children, if it errs, it errs because a mother has forgotten some of the births, I do not think that any women exaggerated. It was quite impossible to obtain any information regarding the maternal mortality; this is probably high, as the condition of the younger women was poor, and while I should say the women were healthiest between 20 years and 30 years, there were a number of these who were not really fit to have children.

It is interesting to note the greater fecundity of the "Hill" people, I think that their dietary is a little better than that of their relations on the Lake, as they get a little more protein, more maize, and perhaps more meat.

TABLE SHOWING THE RESULT OF EXAMINING 707 CHILDREN.

AGE GROUP 0 TO 2 YEARS NUMBER EXAMINED = 186.			AGE GROUP 2 TO 10 YEARS NUMBER EXAMINED = 521.	
Abnormality.	No. Affected.	Percentage.	No. Affected.	Percentage of Total
Splenic enlargement.				
Palpable ...	40	21.5	37	7
1—2 fgs ...	6	3.2	27	5
2—3 fgs ...	22	10.6	8	2
3 fgs ...	19	10.4	—	—
Anaemia, No Oedema ...	83	45	87	17
With Oedema ...	89	48	6	1
Malnutrition ...	78	42	—	—
Malaria ...	68	36	—	—
Conjunctivitis ...	17	9	5	1
Yaws ...	8	4.4	9	2
Scabies ...	8	4.4	12	.2
Dysentery ...	6	3.2	—	—
Schistosomiasis ...	6	3.2	170	33
Bronchitis ...	5	2.7	—	—
Syphilis ...	4	2.2	—	—
Rickets ...	1	.5	1	.2
Constipation ...	3	1.5	—	—
Hernia ...	1	.5	—	—
Birth injury ...	1	.5	—	—
Good condition ...	17	9.1	—	—
Otitis ...	—	—	3	.5
Epilepsy ...	—	—	2	.4
Tonsillitis ...	—	—	2	.4
Ascites ...	—	—	1	.2
Broncho-pneumonia? ...	—	—	1	.2

Diet. For various reasons these people have adopted cassava as their main dietary, this is I believe, to all practical purposes, protein free, and in any case is a very poor food. They use 5 kinds of cassava, *Tipura*, *Kapante*, *Kamalusu*, *Beitisumari* and *Tawa-tawa*, these are generally first skinned, put into the water and left to soak and ferment, then dried in the sun, then powdered and made into porridge by being stirred into boiling water while this is on the fire, and removed as soon as enough has been stirred in. *Tipura* must be prepared this way as it is otherwise very bitter, *Kapante*, *Kamalusu* and *Tawa-tawa* can be roasted and eaten; *Beitisumari* can be eaten raw. These foodstuffs grow all the year round. All other foods are considered as relishes.

Fish. The fishing depends very much on the weather, the *Mwera* season is a very poor time as it is frequently too rough to either use seine nets or to go out in canoes, August to October are the best months. It is said up and down the Lake shore that the Atonga are the best fishermen, have the best nets, and the best canoes but they catch less fish than any other of the Lake people, this is quite true, they have practically no swamps, and thus are unable to use many basket traps which catch the vast majority of fish, in season and out. A big seine net costs about £10 and takes about a year to make, these are, therefore, the monopoly of the rich, they are hauled by the owner's family and if more men are necessary these get paid. The owner of the net then sells those fish which he does not need for his family, the price would work out at about three pounds for twopence; but by far the greater proportion of the catch is required for the family. One morning's haul I watched in *Ussysia* caught enough to keep the owner's family for a fortnight; they have place rights for hauling, and find it necessary to rest each place after a haul for about a fortnight or so they say.

They have another kind of big drag net about 50 yards long by fifteen deep and semilunar in shape, this they use between two canoes in rocky places, I did not see this used, this also costs about £10. They use drift nets too, these I only saw in use in places where hippo and crocodiles abounded and I do not think they are much good. For *Usipa* they use a net of mosquito gauze with sticks at each end, and when they see a shoal they dive in one at each end and endeavour fairly successfully to enmesh them; they also use a small seine for these, but I did not see it used. The young men and the small boys catch a fair number of the larger fish with hooks in the deep water, and some are caught by trolling. I do not think that the poorer people manage to get fish more than four times a week. *Kungu* is the next most important relish, and is universally used, probably it is the staple relish of the poor on the Lake shore, any woman can catch it, raw, it tastes quite good my dogs enjoyed it—but roasted under the ashes as they eat it, it was not appetising to tempt me to try, however I suppose it is a good food.

Meat, there are not enough cattle kept to have any practical effect on the feeding question, they say they are too hard to keep, I think they do not like the bother of looking after stock: sheep and goats are also too few to have any effect on the general diet. The chickens on the Lake shore have been suffering from an epidemic of "droops" for some time past, and are poor and difficult to obtain. They get very little meat from their own stock. In the past the Atonga were a hunting tribe, and must have succeeded in trapping enough meat to keep them going, but the coming of the Europeans wiped out the elephant, and the rinderpest in 1905 (native dating) decimated the vast herds of buffalo, eland, hartebeeste and roan which then inhabited the district, and the intensive trapping of the people did not give the game a chance for recovery, and there is now practically none. In spite of this lack of game there are more traps, and of more varied kinds set in this district than I have seen anywhere else.

They are catholic in their eating of meat, they denied eating snake, lizard, or crocodile but I should want to know them better before I was convinced of this, monkeys they relish. They have plenty of guns, they told me that there were a number of unlicensed ones, and it is no uncommon thing to hear the firing of a gun. Small duck fetch 6d. each, guinea-fowl 9d. and spurwing 1s. thus unless a poor man can obtain game himself he is not likely to taste it. Rats, mice and other small game are the principle protein source for the small boys, they trap these and catch them with a miserable type of pie dog.

Maize. A little is grown and is usually eaten on the cob, it being too much trouble for the women to pound it, a certain number of men who have lived a lot of their lives in maize-growing areas find that they cannot stomach the cassava when they return to the district, and have small maize gardens and see that they get it pounded.

Millet is grown for beer, the beer is cassava beer, made in the following way, the first day a fairly thick cassava gruel is made and boiled up, it is boiled again on the second day, on the third a thin gruel of millet is added and mixed well in, on the 6th and 7th day it is drunk, the 8th day generally sees it sour. It is a very poor beer compared with maize beer, and can be barely regarded as a food. Sweet potatoes are quite common, and good. Tomatoes, onions and potatoes are grown in small quantities in the hills. In the wetter area the mangoes looked as good as these obtained on the coast, but they were not ripe when I left. Salt is made from the burnings of various swamp and marsh plants, the native names being *Masali*, *Kumbwa*, *Mzuzu*, *Kabu*, *Ngozowoyo*, *Sengali*, *Kasisi*, *Myulla*, *Mangesa*, I had no botanical work with me and was unable to identify these.

Greens. These are only eaten when there is a shortage of other relishes, the women eat them more frequently than the men. The commonest is cassava, but pumpkin, beans and sweet potato leaves are also used and a variety of bush tree leaves.

The wild greens are *Chiatonge*, *Bondwe*, a plant with a red stem and a bur-like seed, *Muyuyu*, which grows on ponds, *Linylongylo*, grows in dambos by the water, *Pulupulo* a tree, *Kapuko* growing near the Lake, and *Chikandu* growing in dambos, I regret my botanical knowledge is insufficient to name these plants properly. Rubber tree leaves are also eaten. There are also eleven kinds of edible mushroom and fungi consumed, *Minami*, *Ndizu*, *Mpofwa*, *Matale*, *Karukulwe*, *Dundwe*, *Murgwe*, *Usuma*, *Kanajawala*, *Ganka*, and *Rundu*.

This dietary has, I am told, often proved fatal to children who have been brought up in South Africa, and there have been cases of families dying out from no known reason on return to this district after long sojourn in South Africa. Many of the older men cannot stomach the cassava on their return, and if they are unable to obtain maize, as in Asisya, they are forced to emigrate again.

Housing. There are about 14,000 huts in the district, and the average human content is 3.5. The houses are used for the protection at night of all young stock, setting fowls sit in the main room, and dogs are free of the house, in some villages the goats and sheep live in the house as well. They are all built on the same scheme, whether round or square, that is they have one main room, which has a door to the front and back verandah, sometimes there are windows to this room, but usually these are boarded or mudded up, plenty of light can be let in this room by opening the doors. Leading off this main room are the others varying in number from two to ten, these are used for sleeping in, storing food, young animals, and for cooking in, there is nearly always a fire in one of these which has no outlet for its smoke, frequently, between rooms there is a raised mud ledge, making it impossible to sweep any but the main room clean, there are very few windows, I saw only two or three houses with working windows, I think they find it cooler and freer from mosquitoes without, and the people think this too, the middle room is the only clean one, and usually has a clean light-coloured mud floor. Mission influence has seen that a number of teachers have brick houses, I saw one other native with one, and two buildings. There is no attempt at town-planning, and the villages are the filthiest I have seen anywhere. Usisya is an exception to this, but there there is so little land that they have had to waste as little space as possible in building.

On the whole the houses are better built and better kept than those of the Achewa, but except for the main room they are no cleaner. Some, but very few, have built latrines, again mostly mission teachers, these were being used and misused, by the family, unfortunately the use or abuse of these had made no difference in the hookworm incidence in children.

Hookworm. Of the 1,700 people seen during this *ulendo* 1,039 were diagnosed as hookworm or roughly 60 per cent.; the people objected to having their stools examined and doubtless had these been thoroughly examined more would have been found, of the 467 stools which were examined 308 were positive. As has been already stated all the children from two years old to ten had hookworm either clinically or microscopically, many to a very marked extent. I consider that signs are being shown by the natives in this, and in other districts, that they appreciate the value of latrines, and that now only personal attention is necessary to enforce the making of latrines. It is only at the beginning that enforce is the word to use, as soon as enough are in use in any village the rest can be persuaded to build more. I am convinced that this disease is responsible for most of the deaths which occur, it weakens the mothers, and renders their milk insufficient for the babies, and by its debilitating effects so lowers the resistance, especially in children till puberty, that any current infection carries them off with the utmost ease.

Schistosomiasis. It was extremely difficult to obtain specimens of urine for examination, and only 504 were examined, out of these 330 were found to contain *Schistosoma haematobium*, in the 508 stool examinations *Schistosoma mansoni* occurred in 6 cases.

I do not attach great importance to this disease in the earlier time of life, children and young men rarely show signs of advanced anaemia or bladder trouble, it seems to change its characteristics as the men grow older, perhaps it is possible to acquire an immunity from it. In older men and women it becomes of grave importance, and is I think, the primary cause of many deaths.

Malaria. As I have said before I think malaria responsible largely for the high infantile mortality, probably concurrently with some other disease, after the children begin to walk they seem to have acquired a fairly useful immunity to this disease. In our present stage we can only give medicine and hope for the best, and I do not think that we will be able to attempt serious control of this for many years.

Venereal Disease. In the district of a total of 123 cases of syphilis, and 66 cases of gonorrhoea were seen. 29 cases of syphilis come from Usisya and 37 cases of gonorrhoea, *viz.*, 24 per cent. and 56 per cent. respectively of the total, in Usisya I only saw 108 people and in the rest of the district 1,592, *i.e.*, 6 per cent. only seen in Usisya. Thus we have, for the Atonga 4.4 per cent. of syphilis, and 2 per cent. of gonorrhoea, and for the Asisya 27 per cent. of syphilis, and 34 per cent. of gonorrhoea. Unfortunately the people were ashamed to confess to venereal disease, and objected to examination.

Emigration. As is generally known a large proportion of these people are in other countries I gathered that they usually go for two or three years and then come back to enjoy their savings among their own people. The first trip is always, to buy, or to pay off debt incurred in buying a wife. The second and subsequent emigrations because they enjoyed the first, and to earn sufficient to buy more women, as although there are large numbers of Christians in the district, it is the exception to meet a man with only one wife. I believe conversion to Christianity to be essential before any education can be obtained, and that this is the reason that so many backslide. They tell me that they enjoy their periods abroad, and that if they get venereal disease they are well treated and cured but many catch these diseases in Blantyre and Chipoka on their way back.

Table showing the number of husbands of women under 35 years of age who are absent from the country.

AGE GROUP, WOMEN.	HUSBANDS			
	In Nyasaland	Abroad	Divorced	Dead
Under 20 years ...	26 or 51%	23 or 45%	—	—
20-25 years ...	38 or 37%	54 or 53%	5	7
25-35 years ...	114 or 57%	68 or 34%	4	15
Total ...	178 or 50%	145 or 40%	9	22

The figures in the above table were procured by asking 357 women where their husbands were.

As to the effects of this emigration, any attempt to dogmatise is rash, and any statements I make must be purely speculative and arise from the opinions I have formed during the two months I have lived with the Atonga.

The principle danger which has to be faced is not, primarily, a medical one, the fact that these people have always been parasitic, on the game, as slaves to the Angoni, and now as clerks and store-keepers, and never a productive people, means, I think, that as they are finding money easy to come by, that they will neglect their home crops more and more; I do not think that this matters much to the returned emigrant, as he usually has some means of catching fish or raising money which he has come by through investing his money in a net or in educating a more youthful relative, and he has probably wives to work for him, and as he gets older, children to borrow from; but this neglect of planting adequate foodstuffs is bound to have a bad effect on the children, even now they have no stamina, this lack of stamina applies to the men as well and I very much doubt their surviving as a useful race unless they live under changed conditions. What is needed for the survival of the Atonga is an industry in their midst, they should live round and in a town, so that they can earn the money to buy their food: unless there is mineral wealth in their hills I think it most unlikely that they will be able to do so. In my opinion the European occupation saved the Atonga as a race, if we had not come they would have been absorbed into the Angoni, now we have postponed the inevitable end, and their fate is to become absorbed into a city population, or else die out. The headmen have never any authority over their people except in a time of danger, and now they have even less, the Atonga walks by himself. I consider the paying for relatives' education, not a sign of clannishness, but an investment.

Conclusions. In the Chinteché district there is a people confined to an area in which, in my opinion, they are unable to grow enough food for the production of an A1 race, this is due to the insufficiency of the land and the lack of agricultural skill in the people.

The insufficiency of proper food is not enough to produce any marked food deficiency diseases, and as they have always cassava they never have a famine, but when one comes to live and play with a maize-eating people, like the Angoni here (Mzimba) the first thing to notice is a difference in the sheen on the skin of the men, women, and children, then the men are full of life and able to walk all day without undue fatigue, this at a time when maize is very scarce. The Atonga have a dry skin which looks flakey, they do not seem to be able to raise any enthusiasm over their days' pleasures, except perhaps their "marching bands" and for these they can lounge around and watch; they are incapable of long walks, with or without loads, and they do not appear to be ready to make any effort to improve their home conditions.

Their houses are much better than most natives, but they are as dirty or dirtier, and although they may be ready to put labour into the external beautification of their houses or clothes, they are not prepared to go to the trouble of keeping sufficient stock for their needs, which I believe they could.

They prefer the doctors they have known who are just giving them medicine and not asking questions, this is what they told me; under those circumstances the diagnosis of disease is not made any simpler, and in list of diseases I do not feel satisfied that I have diagnosed every case of venereal disease, and it may be more common in the district than my figures give. Lepers I saw very few, they may have been concealed. Tuberculosis is I think, most uncommon.

THE ASISYA.

I am dealing with the Asisya people in a separate section to that of the Atonga, as I consider that they are different race, their diseases in general are similar to the diseases of the rest of the district, but I am dealing with the venereal disease under this section, because I do not consider that in the rest of the district there is sufficient infection to warrant special steps being taken.

I think the Asisya are descended from a raiding party of Swahili slavers who for some reason best known to themselves settled in the Usisya peninsula.

They live utterly isolated from the world, their land is a small triangular, peninsular, the base being formed by a line of precipitous hills, rising some 2,000 feet so sharply that the track down is nearly impracticable, the base is perhaps two miles long, the sides are roughly $1\frac{1}{2}$ miles long, and at the apex is a small hill, the rise of the Lake has, I am told, lost them territory more than a mile deep. I should say that the cultivatable land is 1.8 square miles, and it is not nearly big enough to grow all their food, the rise of 10 feet in the Lake would, I think, swamp most of the land they have now, and a lesser rise will swamp the village, the people except that they will have to rebuild after, or during these rains. The land is held by individuals, and any plot can be bought and sold, in a similar way to the Zanzibar land tenure, it is private, not communal property.

Lack of land has forced them to build their villages in as small a space as possible, these extend along the Lake shore, and are built facing the Lake shore, on one side a few people have made a promenade built facing the Lake, the majority have built on a main street, which is kept very clean, and looks excellent, unfortunately the backs are filthy, worse I should say than the average village.

The people are very independent, they did not want me to come, when porters were sent to bring in my hospital stores, some six miles back, they were stopped by their companions and told they were not to bring in my loads, as the Asisya were not going to be carriers, this was directly opposed to the orders of their principal headman; they then held a meeting to say that they would not have allowed the District Commissioner to send me if they had realised that I wanted to ask their women how many live and dead children they had had, and to examine everyone, they wanted, they said a doctor, who would give them medicines they asked for without any questioning.

They have built many latrines, and very nicely too, I do not think these are used very much, as the precincts of the village were very dirty, and the latrines were very clean.

The houses are all square built, on the Atonga pattern, but there were more often supplied with real windows, than those of the Atonga, and that all, or nearly all, had fenced in compounds at the back

They cannot grow enough cassava—they grow nothing else—to feed themselves, and they do not catch enough fish, they have money to buy and they must import a large amount of their food. They are a much better fed people than the Atonga, and in better condition.

NYASALAND



